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Educational News and Editorial Comment

NATIONAL PHYSICAL TRAINING

President Eliot recently prepared for the United States Chamber of Commerce a statement of what he regards as the most urgent needs of American education. It is significant that to his mind a better program of physical training is the matter of first importance. A part of his statement as published in the February issue of the *Nation's Business* is as follows:

The first step in the improvement of the American schools is the introduction of universal physical training for both boys and girls from six to eighteen years of age. The program should be comprehensive and flexible, so that the needs of different types of children and different individual pupils can be met. It should include the means of remedying defects and malformations as well as of developing normal bodies. It should include exercises which might fairly be called drills, but many more which would properly be called games or sports. Except in extreme weather most of the exercises should be conducted in the open air. Carriage, posture, gait, rhythmical movements, and team-play should be covered. With the introduction of universal physical training should go the universal employment of physicians and nurses for incessant diagnostic and preventive work in schools of every description.

The faithful and intelligent administration of a sound program of physical training in all American schools, public and private, elementary and secondary, is so intensely a national as distinguished from a local interest, that the program should be prescribed by the national Bureau of Education, or some analogous bureau or commission; and the execution of the program should be incessantly supervised by inspectors appointed and paid by the national government.

Further, the national government might properly and wisely pay to state, county, or municipal educational authorities, or to the trustees or owners of private schools, a small sum (a dollar perhaps) annually for each pupil well trained under the prescribed program for one year, as determined by the national inspectors. When universal physical training has been well carried on for twenty years, an immense improvement will be seen not only in the aspect of the population as respects posture, relation of weight to height, and muscular development, but also in their comfort, health, and productiveness at daily labor.

INTERNATIONAL CO-OPERATION IN EDUCATION

In the *Saturday Evening Post* of May 7 there is an article by H. G. Wells entitled "The Salvaging of Civilization, the Schooling of the World." In this article Mr. Wells has urged the setting up of an entirely new curriculum in the elementary schools of both his own country and ours. The breadth of his ambition for the common schools has led him to advocate a course of study which includes a comprehensive survey of languages, a new type of history, mathematics, and science, and a broader cultivation of the appreciation of the arts.

With that portion of the article which deals with the curriculum we cannot concern ourselves at this time. There is a discussion of school organization, however, which is of such importance that it ought to come to the attention of every superintendent and school principal in the United States.

Mr. Wells points out that there is no possibility of securing for every school a teacher of first-class ability. The number of teachers who would justify this description will always be smaller than the demands of the generation to which they belong. Mr. Wells calls attention to the fact that this is one of the important reasons why educational reforms have worked out very slowly. Reforms always assume, he says, that every teacher can be called on to carry forward the work of the classroom at the highest possible level, and it is because this assumption is not valid that most reforms fail. They make too much of a demand upon the teaching staff of the schools. For a similar reason ordinary schools suffer from poor organization of their class exercises. Some mediocre teacher is always trying to teach a lesson which she or he prepared individually, and since the teacher is not of the highest grade this

continual experimenting with lessons works out to the disadvantage of the pupils. Mr. Wells would have the schools organized on the principle that all class exercises should be dictated by the best teachers. Wherever anyone is found who is doing first-class work in geography or mathematics or any other subject, his method should be carefully recorded and the material which he employs for illustration should be duplicated. Other schools should then be supplied with the formulated material that comes from the hand of the expert teacher. A new type of co-operation will thus grow up in the schools which will give the ordinary teacher the benefits of the lessons prepared by those who are most competent in any given field.

Two paragraphs from Mr. Wells's article indicate how he plans to work out this general scheme in an international way so that the schools of all countries will have the benefit of the best material which can be prepared anywhere in the world.

> Let me first suggest that every school should have a complete library of very full and explicit lesson notes, properly sorted and classified. All the ordinary subjects in schools have been taught over and over again millions and millions of times. Few people, I think, realize that, and fewer still realize the reasonable consequences of that. Human minds are very much the same everywhere, and the best way of teaching every ordinary school subject, the best possible lesson, and the best possible succession of lessons, ought to have been worked out to the last point, and the courses ought to have been stereotyped long ago. Yet if you go into any school today, in ninety-nine cases out of a hundred you will find an inexpert and ill-prepared young teacher giving a clumsy, vamped-up lesson as though it had never been given before. He or she will have no proper notes and no proper diagrams, and a halting and faulty discourse will be eked out by feeble scratchings with chalk on a blackboard, by querulous questioning of the pupils and irrelevancies. The thing is preposterous.
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> And linked up with this complete equipment of proper lesson notes upon which the teacher will give the lessons, there should be a thing which does not exist at present in any school and which ought to exist in every school—a collection of some hundreds of thousands of pictures and diagrams, properly and compactly filed; a copious supply of maps, views of scenery, pictures of towns, and so forth, for teaching geography; diagrams and tables for scientific subjects, and so on. You must remember that if the schools of the world were thought of as a whole and dealt with as a whole, these things could be produced wholesale at costs out of comparison cheaper than they are made today. There is no reason whatever why school equipment should not be a world

market. A lesson upon the geography of Sweden needs precisely the same maps, the same pictures of scenery, types of people, animals, cities, and so forth, whether that lesson is given in China or Peru or Morocco or London.

PAN-PACIFIC EDUCATIONAL CONFERENCE

The nations that border on the Pacific Ocean have organized themselves into a conference known as the Pan-Pacific Union. It is the purpose of this organization to call together from time to time representatives of the different nations for the discussion of economics and social matters. During the coming summer it is planned to carry on a conference of educators which shall deal with the fundamental problems of the countries concerned. A full announcement borrowed from the *Pan-Pacific Union Bulletin* is as follows:

For the first time in the history of Hawaii the United States government is officially inviting delegates to an international conference to be held in the city of Honolulu. The Nile today brought to the Pan-Pacific Union a copy of the letter sent out by the Department of State inviting the countries of the Pacific to participate in the Pan-Pacific Educational Conference, which will be held here next August. The letter from the State Department, Washington, February 19, follows:

"To the Diplomatic Officers of the United States accredited to Guatemala, Salvador, Nicaragua, Honduras, Costa Rica, Panama, Colombia, Ecuador, Peru, Bolivia, Chile, Japan, China, and Siam:

"Gentlemen: A Pan-Pacific Congress on Education will meet at Honolulu, Hawaii, from August 11 to August 21, 1921, under the auspices and patronage of the Pan-Pacific Union.

"A presentation of educational conditions in each country.

"A presentation and discussion of the possibilities and needs of education in the several countries, viewed from the standpoint of their civilization, their form of government, their productive activity and natural resources.

"A discussion of the forms of organization of schools and other educational agencies to meet these conditions and minister to these needs.

"A discussion of support of education, including sources and methods of taxation.

"It is the desire of the Union that each of the states and self-governing colonies bordering on the Pacific should be represented at the forthcoming Congress, either by delegates actually engaged in the elementary, secondary, higher, and professional and technical education of that country, or by those competent to speak of such work.

"At the request of the directors of the Union, the United States Commissioner of Education will undertake the direction of the Congress; and the

Secretary of the Interior, under whose administration the Bureau of Education falls, has requested the Department of State, on behalf of the Union, to transmit an invitation to the governments of the states and self-governing colonies bordering on the Pacific to appoint delegates of the character mentioned to the Congress.

"You are accordingly instructed to communicate, on behalf of the Pan-Pacific Union, to the governments to which you are respectively accredited, an invitation in the sense above indicated. You will add that while the Congress will not be under the auspices and patronage of the Government of the United States, this Government will be glad to learn that the Government to which you are accredited will regard the Congress of sufficient interest and importance to warrant its participation therein by expert delegates.

"Detailed information concerning the Congress will be later furnished by the United States Bureau of Education and by the Pan-Pacific Union.

"I am, gentlemen,

"Your obedient servant,

"For the Secretary of State,

"ALVEY A. ADEE,

"Second Assistant Secretary."

CERTIFICATING AGENCY IN THE UNITED STATES

Dr. Monahan, of the Bureau of Education of the National Catholic Welfare Council, has prepared for the use of Catholic schools and colleges a complete statement of the agencies which grant teachers' certificates in the different states of the United States. This material is being distributed to Catholic schools in order that there may be a general understanding of the requirements in the different parts of the country for admission to the teaching profession. One part of the pamphlet which contains this general information is of so much interest to all students of education that it is quoted so as to indicate the different types of agencies in the different states which are responsible for teachers' certificates.

Teaching certificates are issued by state, county, and local (town, district, or city) authorities. Regulations governing city certificates are in most cases made by the local boards and are too numerous and varied to be included in this brief paper. Temporary and emergency certificates and permits are also omitted. Considering then the state, county, and township or district certificates (outside of cities), there are the following systems of administrative organization:

1. State systems, in which all certificates are issued by state authorities and the state retains control over the whole matter of certification of teachers:

New Hampshire, Rhode Island, Maine, New Jersey, Vermont, Delaware, Maryland, Virginia, West Virginia, North Carolina, Florida, Tennessee, Alabama, Louisiana, Minnesota, Iowa, North Dakota, South Dakota, Montana, Wyoming, Utah, New Mexico, Nevada, Arizona, Oregon, Washington; total 26.

2. State controlled systems, in which state, county, and district (New York) authorities may issue certificates, but the authority governing the issue, including giving questions and examining papers, is retained by the state officials; local authorities merely issue certificates: New York, Kentucky, Missouri, Nebraska, Indiana, Illinois, Idaho; total 7.

3. Semi-state systems, in which states exercise some but not complete control; the state department makes the regulations and gives the questions for examinations, but local authorities examine the papers and issue certificates: South Carolina, Georgia, Arkansas, Mississippi, Oklahoma, Texas, Kansas, Ohio, Michigan, Colorado; total 10.

4. State-county systems, in which the state, county, township, city, and certain district authorities all issue some certificates and govern all or important regulations, formulating questions for example, under which they are granted: Pennsylvania, California, Wisconsin; total 3.

5. State-local systems, in which complete power of certain certification is given to the state department, and complete power of others to the township school committees: Massachusetts, Connecticut; total 2.

The preceding classification shows a decided centralization of certification in state authorities. The tendency toward this centralization has been very marked during the past decade. Uniformity in a state system is obtained only when state authorities examine the papers, as well as give questions and make regulations under which examinations are held and certificates issued. In thirty-three states, therefore, the state control is supreme.

PRACTICAL CIVICS IN THE ELEMENTARY SCHOOL

Superintendent Raaen, of Finley, North Dakota, has described an organization which was developed under his direction in the elementary schools. This organization has the name Little Citizen's League. It is intended to give practical training in civics to children who are too young to assume all of the obligations of self-government but ought to be led by their school activities to see the necessity of co-operation in developing a better community.

First of all, I made the children understand that the Little Citizen's League was a club organized for their own special benefit, and if they would do all in their power to make it a success, they would be the winners. By having this club the children learn to become independent workers and they realize that the school is for their own good. Every pupil is a member of this club,

and when we organized we elected our officers and committees, chosen from the older pupils. I have four committees. One is a committee of three on information and programs, whose duty it is to obtain all the information possible regarding work taken up in class. They send for pamphlets on health, agriculture, etc., and then different ones have them for special reports in class. This committee also has charge of the programs; they assign each pupil his part, with the teacher as a general supervisor, but the teacher should stay in the background as much as possible and let the children use their own minds.

The second committee (of three) is on health and sanitation, whose duty it is to see that everything in and around the school is clean and sanitary, such as the water jar, cooking utensils, etc. This committee also has charge of the Health Crusade work. If the school has not joined the Health Crusaders Club, a daily and weekly inspection plan should be arranged, whereby this committee inspects each pupil and keeps a record of the condition of his or her finger nails, teeth, face, hands, shoes, handkerchief, etc. The weekly inspection deals with the bath, clean clothes, hooks and eyes, buttons, etc. The children should be taught to sew on their own buttons and hooks and eyes in their clothing.

The third committee is on physical training and is responsible for active organized play and recreation at every intermission.

The fourth committee is on aid, whose duty it is to take care of all funds raised by the pupils such as Junior Red Cross, Near East Relief, etc. They should also instruct the younger pupils in regard to their duties as members of the club.

Then we elected a president, whose duty it is to preside at the club meetings and programs. A policeman was elected who keeps general good order among the pupils. It is also his duty to put up the flag each day when the weather permits.

There are a great many benefits derived from the Little Citizen's League. It teaches the child responsibility and trains him to actual practice in organization, and he realizes that it is a government "of his world, by his world, and for his world." It trains the child to think of himself, of others, and their relationship to him, and also to speak for himself and others.

I think that any teacher who tries this plan will find out for herself that each pupil will have a different attitude toward her and the rest of the pupils, and they will like the club.

THE STERLING-TOWNER BILL

The bill for the creation of a federal department of education is to be sponsored in the Senate by Senator Thomas Sterling of South Dakota and is hereafter to bear his name instead of that of Senator Smith. Discussions of revisions are becoming more common, and it

is not unlikely that the bill will undergo in the near future those changes which have been advocated for some years in these columns. As powerful support to the contention that no federal department should be organized which does not include the Federal Board for Vocational Education, comes the referendum of the colleges. On other matters also the colleges of the country have spoken with much promise of influence. If the sponsors of the movement are wise, they will hasten to take advantage of the suggestions which the American Council on Education offers. A very full statement of the Council's position is reported by Mr. Ryan, educational editor of the *New York Evening Post*, as follows:

An overwhelming majority of the membership of the American Council on Education, composed of the leading higher educational institutions and educational organizations of the United States, favors the creation of a federal department of education, with a secretary in the President's Cabinet, according to the results of a referendum conducted during the past year and just made public by the Council.

The result of the referendum is regarded as of special importance because of the conservative character of the membership of the Council, which includes practically all the privately endowed colleges and universities of the country. Educators active in the Council have often been cited as opposed to the department of education plan.

On the question of large federal appropriations apportioned on a fifty-fifty basis to the states the Council's membership was about evenly divided. A large majority favored amendments to the Smith-Towner Bill as it was presented in the Sixty-sixth Congress, one amendment insisted upon by most of the membership being to include the Federal Board for Vocational Education in the new department when first created. Another amendment generally indorsed provided for an advisory council to the Secretary of Education—a suggestion that has been incorporated in the new bill as introduced by Congressman Towner in the House of Representatives and Senator Sterling in the Senate.

Conspicuous among the educational organizations that favor the department of education plan, as recorded in the Council's report, is the Association of Land-Grant Colleges. This association has generally been put down as opposed to the idea, because of a fear among the members that a department of education at Washington might mean interference with the half-century-old relationship between the agricultural colleges and the United States Department of Agriculture. The Association of Land-Grant Colleges, it now develops, has gone on record specifically in favor of a department of education, with national leadership and national financial support, but it requests guarantees that the

existing arrangement with the Department of Agriculture shall be maintained.

The council report includes a lengthy opinion from the University of Chicago Senate, which, while approving strongly of federal participation in education, points out what it regards as defects in the pending bills. In particular, it urges that the federal agency to be created for education be primarily scientific in character and not chiefly an agency for the distribution of funds to the states.

In the meantime, the situation at Washington with regard to the bill continues uncertain. All the forces behind the bill agree that President Harding's proposal for a department of public welfare is decidedly embarrassing. They are willing to co-operate with the administration forces, however, on the following conditions: (*a*) that the proposed department be called a Department of Education and Public Welfare; (*b*) that the fundamental principles of the educational bill be accepted and included in the educational division of the proposed department. General Sawyer, Senator Kenyon, and Congressman Fess are all said to favor the proposal for a department of education and welfare, with the principles of the Education Bill included, but President Harding has not yet made a decision. The matter was discussed in a Cabinet meeting last week, and it is reported that the Cabinet divided, some members definitely favoring a separate department of education.

SELECTING TEXTBOOKS

There is a section of the National Education Association which deals with educational publications. This section is attended largely by publishers, and the papers deal for the most part with problems which confront the makers of books. From time to time, however, the section has listened to discussions which are of much broader interest. A copy of the paper presented by Mr. C. W. Taber, western manager of the J. B. Lippincott Company, to the publishers contains a series of statements about the responsibility for the selection of textbooks which is not likely to be accepted without debate. Teachers have in recent years demanded a larger share in administrative control of schools, and there will be many who will not accept the dictum that the superintendent should have sole authority or responsibility in the selection of textbooks.

Mr. Taber's argument is as follows:

There appears to be a standard, a scale, a measurement, or method of procedure for nearly everything connected with the schools from the buying of

fuel to the hiring of teachers, with the single exception of the selection of textbooks. The methods employed are as numerous as are the superintendents and as diversified as the sum-total of their idiosyncrasies.

A man who is educationally big enough to be the superintendent of a school system should be big enough to assume all responsibility for the selection of textbooks. To appoint a textbook committee to vote on texts means in many cases that the superintendent is afraid to stand before his constituency and say, "I did it. What have you to say about it?" The committee divides the responsibility as well as the censure of the community, if any. To leave the vote in the hands of teachers is an admission that the superintendent knows little about the subject under discussion. If several books are to be adopted a committee vote always means compromises, and compromises should not enter into the selection of texts.

To fix the responsibility upon the superintendent does not mean that he would not consult his principals, supervisors, and expert teachers. It simply means that he shall be the final arbiter; he shall cast the deciding vote.

If a textbook committee is to be chosen it should be a small one; perhaps of not more than three members. In the counties of one state the textbook committees consist of about thirteen members and every county must vote on the same day. Here is a situation that precludes many publishers from presenting their books, though these may be the latest and best of their kind. Publishers do not like to submit books if they cannot be followed up by personal agency work, but in this state only the companies able to maintain a large field force are able to work the county adoptions, with the result that they secure the bulk of the business. This is another illustration of the impossibility of making laws, rules, or regulations that will be equitable to all publishers.

A textbook committee should not include anyone who is not at the time engaged in school work. University and college professors are not suited to select grade or even high-school texts unless they are connected with a department of education or a practice school in which such texts are being used.

Why a plumber, a carpenter, a lawyer, a clergyman, or a county supervisor should be selected for the task of adopting texts simply because such an individual is a member of the board of education is as much a mystery to the publisher as it is an obvious absurdity.

Doubtless, in the matter of formal adoptions it may be necessary for the local school board legally to confirm the superintendent's selections, but such confirmation should be entirely based upon the superintendent's final decisions.

Civic, social, commercial, or religious organizations should not be recognized in the selection of textbooks. Their recommendation for the introduction of new subjects into the curriculum or for the discontinuance of certain subjects should receive serious consideration by both the superintendent and the local board, but the selection of texts to cover necessary subjects is a matter to be determined only by the superintendent with perhaps the recommendation of his advisors.

EXPENDITURES FOR LUXURIES

Commissioner Claxton has made the point in a number of recent addresses that the nation expends on luxuries so vast an amount of money that if adequate interest could be aroused in education there would be no lack of funds with which to organize and carry forward the work of the schools in the United States. The detailed figures on which Commissioner Claxton's statements are based may be of interest and are given in full in a letter signed by Secretary Houston, former Secretary of the Treasury of the United States. The statements in this letter are as follows:

I have your note of June 7, referring to a reported statement from me to the effect that a canvass of the tax returns for 1919 show that there has been expended in this country at least $22,000,000,000 for luxuries. You ask that I advise you as to the accuracy of the report and the basis for the figures.

My statement on which the report seems to have been based was that I had asked the Treasury experts to canvass the tax returns and any other sources of information and give me an approximate estimate of what the people would expend in twelve months on what, for the purpose of taxation, Congress seemed to regard as luxuries, or what they would class as luxuries. They handed me the following estimate of expenditure on the items indicated. The estimates under 1 and 2 are based on the tax rates and the tax receipts. Those under 3 are based on such information as the experts could gather.

1

ESTIMATED EXPENDITURES FOR CERTAIN ARTICLES UPON WHICH FEDERAL TAXES ARE NOW LEVIED

Chewing gum	$ 50,000,000
Candy	1,000,000,000
Cigarettes	800,000,000
Soft drinks, including ice cream and soda	350,000,000
Perfumery and cosmetics	750,000,000
Admissions and dues	800,000,000
Jewelry	500,000,000
Cereal beverages	230,000,000
Cigars	510,000,000
Tobacco and snuff	800,000,000
Sporting goods	25,000,000
Firearms and shells	50,000,000
Cigar and cigarette holders	1,000,000
Hunting and shooting garments	7,000,000
Fur articles	300,000,000
Yachts	1,000,000
Carpets, rugs, and wearing apparel (on excesses over stated prices)	1,500,000,000
Total	$ 7,674,000,000

2

Liveries	$ 3,000,000
Pianos, organs, victrolas, etc.	400,000,000
Electric fans, portable	8,000,000
Art works	15,000,000
Toilet soaps, etc.	250,000,000
Automobiles and parts	2,000,000,000
Total	$ 2,676,000,000

3

ADDITIONAL ARTICLES

Ice cream	$ 250,000,000
Cakes, confections, etc.	350,000,000
Luxurious services	3,000,000,000
Luxuries in hotels and restaurants	750,000,000
Luxurious food, etc.	5,000,000,000
Other luxuries—joy riding, pleasure resorts, races, etc.	3,000,000,000
Total	$12,350,000,000
Total estimated expenditures	$22,700,000,000

Opinion will differ as to whether many of these articles should be classed as luxuries or nonessentials and expenditure on them as unwise or extravagant. Expenditure in reasonable measure for many of the articles would not be regarded as luxurious or wasteful, but expenditure in such volume on any of them and the aggregate expenditure for such things and services would, I imagine, be regarded as unreasonable and extravagant, especially in view of present domestic and world conditions. I am aware of the fact that no one would ask the public to eliminate all such expenditure or expect the public to make more than a reasonable reduction of it.

News Items from the School of Education of the University of Chicago

THE NEW YORK SURVEY

For some years there has been considerable dissatisfaction with the organization and administration of rural education in New York state. This dissatisfaction has been voiced by the State Department of Education; and this Department has in many ways sought, through legislation and otherwise, to ameliorate the situation.

In even louder tones the dissatisfaction has been voiced by the farmers' organizations of the state. They are not entirely agreed as to the nature of the undesirable conditions, nor as to the remedy; but there is no doubt in their minds that something needs to be done. Professional organizations also agree that fundamental changes and improvements in rural-school organization and administration are needed.

As a result of this agitation, a committee of twenty-one, representing farm organizations and women's organizations, began to urge a year ago that a survey be made of villages and rural districts. The committee finally secured the necessary funds for a state-wide survey and organized an executive committee consisting of representatives of Cornell University and the State Department of Education. This committee has in turn employed a staff of educators who are at present making the survey.

In distributing the labor of the survey, it was considered advisable to give the study of administrative organization and procedure to investigators who had not committed themselves to any plan of administrative organization for rural education, who were not so close to the immediate situation as to cause presumption of special interest of any kind, and who also were familiar with state-school organizations and rural-school problems.

The Department of Education of the University of Chicago was able to comply with these conditions. Director Judd was

therefore chosen to direct the labors of investigating the administrative organization and procedure. He has been in Albany frequently during the Spring Quarter for purposes of consultation and organization of this division of the survey. He also plans to spend the month of September in New York.

The work breaks itself up into a number of lines of investigation, and these Director Judd has distributed to certain Faculty members and Fellows of the Department of Education and to certain members of the faculty of the School of Agricultural Education at Cornell; to Superintendent Morrison, of the Laboratory Schools, the state inspection system; to Mr. T. D. Brooks, Fellow in the Department of Education, the problems of the supervisory unit and the office of district superintendent; to Mr. T. H. Shelby, another Fellow in the Department, the local district unit and the work of the local trustees and the local boards of education; to Professor G. A. Works, of Cornell, the consolidation of schools; to Mr. Kruz, Mr. Ferris, and Mr. Eaton, respectively, the regents' examinations, the high schools, and vocational education; and to Professor Bobbitt, the general organization of the state administrative system as it relates to rural education, the distribution of responsibilities and functions, and the interrelations and coordinations. Professor Bobbitt spent the Winter Quarter in Albany and in visiting the various school districts throughout the state.

Four methods, in the main, are employed in the accumulation of the necessary data: (1) examination of the records, reports, and correspondence on file in the state education building at Albany; (2) correspondence and supplementary reports for securing facts needed but not on file at the state department; (3) direct observation of rural schools and conditions in representative areas distributed over the state; (4) conferences with individuals, both lay and professional, who are interested in, and informed concerning, the rural-school situation. Most of the work on the records has been completed. Some of the field conferences have been held. The major portion of the field work will be accomplished during the pleasant-weather months of late spring and early autumn.

PROFESSIONALIZING THE PRINCIPALSHIP

WORTH McCLURE
Gatewood School, Seattle, Washington

The principalship is in the process of evolution and is even now passing into a new period of development. The previous levels may be designated as the head-teacher stage, the clerical stage, and the managerial or administrative stage, which latter is the one we are now leaving for another that is to be still higher, namely, that of professional leadership.

The growth of the principalship has been discussed more fully in a previous article.[1] The purpose of this paper is simply to present some of the evidence for the belief that the present tendency is toward professional ideals and standards. All of the material here presented was obtained through an investigation recently completed by the Seattle Principals' Association, information having been collected from city superintendents, university professors of education, and elementary-school principals in the city of Seattle.

1. Qualifications required of candidates for appointment to principalships, as well as customary bases for the promotion of principals in service, show a tendency to emphasize the professional aspects of the principalship.

The joint emphasis, shown in Table I, on cultural and professional training is noteworthy. These items appear to be overwhelmingly favored by the superintendents.

The figures in Table II are strikingly in accord with those of Table I. The predominance of the professional items in both the matter of selection and that of promotion is believed to be a reliable index of tendency and a condition that cannot fail to leave its impress upon the field of practice.

2. In general, principals in large city systems have been or are being freed from the burden of regular classroom instruction.

[1] Worth McClure, "The Functions of the Elementary-School Principal," *Elementary School Journal*, XXI (March, 1921), 500–514.

Table III shows that the day of the teaching principal is practically past, in so far as large systems are concerned. Comments by those answering the question show that it is the apparent aim to abolish the practice as rapidly as possible. In the case of nearly every city reporting that some principals were still required to teach, the parenthetical remark, "small schools only," was added. Some also noted that further relief was being planned.

TABLE I

REQUISITES FOR APPOINTMENT TO PRINCIPALSHIPS—SEVENTEEN LARGE CITIES*

Qualifications	Number of Times Checked
A.B. degree or equivalent	7
Advanced normal diploma	6
A.M. degree or equivalent	1
One-half year of graduate work	1
Examination in academic subjects	1
Experience	1
No definite requirements	1

* Superintendents were asked to examine a list of requirements and check those items required.

TABLE II

BASES FOR THE PROMOTION OF PRINCIPALS—TWENTY LARGE CITIES

Items Considered	Number of Times Checked
Success in improving instruction	18
Professional leadership in the system	16
Professional training	16
Length of service	14
Administrative ability	1
"Broad general culture"	1
"Sympathetic attitude of helpfulness"	1

When it is noted that in sixteen of the seventeen cities making returns upon this point nine-tenths of the principals are already freed from duty as classroom teachers, it will be seen how complete the change has already become.

It may be argued that considerations of management rather than of professional leadership have been the impelling causes. This may have been true at the outset. Nevertheless, when the facts just given are considered in connection with those of Tables IV

and V, it will be obvious that the present concept of the principalship carries with it considerably more than the functions of a purely managerial type.

TABLE III

AMOUNT OF REGULAR CLASSROOM TEACHING REQUIRED OF PRINCIPALS—SEVENTEEN LARGE CITIES

Number of Cities	Percentage Not Teaching	Percentage Teaching Half-Day	Percentage Teaching Full Day
10	100*		
1	95	5	
1	95		5
1	92		8
1	90	10	
2	90		10
1	45	50	5

*Three cities included here noted that principals taught one class per day.

TABLE IV

EXTENT OF CLERICAL HELP NOW FURNISHED—TWELVE CITIES*

Approximate Percentage of Principals' Corps	Number of Cities Furnishing Aid
100	2
80	1
$66\frac{2}{3}$	1
20	1
$12\frac{1}{2}$	1
10	2
0	4

*In addition to the twelve making specific answers, two replied, "practically all."

3. In addition to relief from teaching, clerical assistance is now frequently furnished to elementary-school principals. Of the fourteen cities making reply to this question, six may be said to have committed themselves to the policy of furnishing clerical help to principals, while four others are possibly making an experimental start. Granting that the six who did not answer failed to do so because their returns would have been negative, the data show a strong tendency of an initial character toward relieving the principal of routine duties.

This would indicate a prevailing conception that the principal's duties include functions of such great importance that it is poor economy to tie him to his office desk. It may be argued that these important functions are simply the larger administrative activities of the oversized school. This might be a plausible explanation if educational policies were actually drifting in the direction of gigantic school organizations. Table V, however, indicates that this is not the case.

4. The size of school recommended by superintendents of large cities as most advantageous educationally is an indication of the importance now coming to be attached to the professional functions of the principal.

TABLE V

OPTIMUM SIZE OF SCHOOL, ACCORDING TO THE JUDGMENT OF SUPERINTENDENTS OF LARGE CITIES

Number of Pupils	Number of Times Mentioned
1,500 and over	2
1,400	2
1,000	6
1,000–800	1
900	1
800	1
800–600	1
600–500	2
Range	500–1,500+
Median	1,000

Table V shows clearly that oversized elementary schools are not in favor, since only four of the sixteen replies showed a preference for schools of more than 1,000 pupils. The desire is obviously not to make the principal merely the chief executive of a huge educational concern. A school of the size indicated is not so immense that the personality of the leader cannot be felt throughout the whole, but it is great enough to demand professional standards of accomplishment and leadership.

5. Many principals are now doing systematic professional study. Since the figures in Table VI are based upon estimates only, they are, of course, open to the possibility of inaccuracy.

They may be safely held, however, to show a decided professional attitude upon the part of many principals.

TABLE VI

PERCENTAGE OF PRINCIPALS' CORPS GIVING OUTSIDE TIME TO SYSTEMATIC PROFESSIONAL STUDY—SUPERINTENDENTS' ESTIMATES—TEN CITIES*

Percentage of Corps	Number of Cities
90	1
80	1
75	1
75–50	1
50–40	2
25–20	4

*In addition to the tabulated replies, one superintendent said, "practically all." One said, "many," and another answered, "very small."

The data given in Table VII serve to strengthen the conclusion that a great many principals strive continually to improve themselves by professional study. In this case nearly one-third of those reporting averaged an hour per school day devoted to such effort, in addition to carrying on regular school duties.

TABLE VII

OUTSIDE TIME DEVOTED TO PROFESSIONAL STUDY BY FORTY-THREE SEATTLE PRINCIPALS—WEEK OF MARCH 22–26, 1920*

Number of Hours	Number of Principals
10	1
8	1
7	3
6	2
5	6
3	7
2	8
1	2
0	13

*This was the week prior to the spring vacation, and the preparation of school entertainments, noted in several cases, may have influenced returns on this point.

It is interesting to consider the item of leadership in the profession as participated in by school principals. It was realized

that this would be difficult to measure as to extent, owing to lack of data. Superintendents were asked, however, to state whether any of their elementary-school principals had taken part in any of the following forms of professional leadership within the past five years: (*a*) contribution of articles to professional magazines, (*b*) participation in programs of state associations, etc. Table VIII summarizes the replies to this question.

TABLE VIII

PROFESSIONAL LEADERSHIP OF PRINCIPALS—EIGHTEEN LARGE CITIES

Type of Answer	Magazine Articles	Participation in State Programs
Yes, often	4	3
Yes	8	12
Yes, seldom	1	2
No	1	1

That principals generally have begun to function as leaders in the profession is clearly to be inferred from Table VIII. Appearance upon the programs of professional associations appears to be the more common of the two activities. This no doubt accounts in part for the lack of a literature of the principalship.

As a check upon the data just given, it is timely to compare the reports of Seattle principals upon parallel items. The figures in Table IX seem to confirm the conclusion drawn from Table VIII. The extent to which the principals are members of the "study club" or small discussion group, meeting at regular intervals, is strongly indicative of professional vitality.

TABLE IX

PROFESSIONAL LEADERSHIP OF FORTY-THREE SEATTLE PRINCIPALS

Activity	Number Reporting	Percentage
State programs	14	$33\frac{1}{3}$*
Magazine articles	17	40
Membership in study clubs	27	63

* One principal did not report definitely on this point.

A condition which has acted as a retarding factor in the professionalization of the principalship is the inadequacy of salaries,

making it practically impossible for large numbers of principals to take time off from regular service for the purpose of professional study. There is hope that this situation will improve, however, as indicated by Table X.

TABLE X

SALARIES SUGGESTED BY SUPERINTENDENTS AS ADEQUATE MAXIMA FOR THEIR RESPECTIVE CITIES AND BY UNIVERSITY PROFESSORS AS ADEQUATE MAXIMA FOR CITIES OF 300,000–500,000*

Salary	Number of Times Mentioned by Superintendents	Number of Times Mentioned by University Professors
$7,500	.....	1
5,000	1	2
4,500	.....	3
4,000	5	5
3,500	1	1
3,000	2	.....
Range	$3,000–$5,000	$3,500–$7,500
Median	$4,000	$4,250

* Three other superintendents replied by merely stating the current salaries (1920) for their respective cities, namely, $4,250, $4,000, and $3,000. Another stated that principals were then asking $3,900.

6. Salaries show a tendency to increase to the point where continued professional study is possible and where superintendents will be able to demand it of their principals. Table X does not picture actual conditions, of course. Nevertheless, it indicates the general acceptance by superintendents, as well as university men, of a professional basis for the erection of salary schedules. Herein it shows the trend of the times.

7. The relation of principals to courses of study implies a high degree of recognition of the professional status of the principalship. As shown in Table XI, the principal appears to have considerable leeway as regards academic courses of study, and not so much where the so-called "special" subjects are concerned. It is true that he does not have entire independence, but he clearly possesses the right of initiating changes and modifications, which is the crux of the matter. The recognition of this right by superintendents implies the admission of the principal to the status of professional expertness.

8. The increasing responsibility of the principal as a community leader brings to the front another of his functions that is upon a plane higher than that of mere business managership. This responsibility is being emphasized particularly by the predominating practice in large cities of appointing a principal for each building, rather than a supervisory principal for several buildings. Returns from twenty cities show that only three employed supervisory principals, as just defined, while seventeen appointed a principal for every school. It is of further interest and significance that, of the three cities reporting supervisory principals, one announced a discontinuance of the policy after the school year of 1919–20, one said that only two were employed to look after small schools, and one qualified the affirmative answer by the words, "a few." Practice thus tends to emphasize the principal's responsibility to his community by limiting it to a single unit.

TABLE XI

THE PRINCIPAL'S RELATION TO THE COURSES OF STUDY—TWENTY LARGE CITIES

Question	Yes	Yes, Indirectly	Yes, in Conference	Yes, Limited	Total Yes	No	Not Answered
Has the principal a voice in formulating:							
Academic course of study?..	19	.....	.....	.....	19	1	.....
Special course of study?....	4	5	.....	.....	9	9	2
Has the principal authority to modify:							
Academic course of study?..	6	.....	6	6	18	.....	2
Special course of study?....	2	.....	10	3	15	4	1

9. The tendency among principals is to recognize their responsibility to their communities more keenly. Twelve out of fifteen superintendents answering stated that the majority of their principals appeared to recognize the importance of being educational leaders in their respective communities. Thirty-one out of forty-three Seattle principals stated that they were co-operating with at least one community organization; eighteen, with two organizations; five, with as many as five such organizations. Such figures are too indefinite, of course, to show more than the general tendency, but they seem to do this with considerable clearness.

SUMMARY

The tendency to elevate the office of principal to the plane of professional leadership is emphasized in the following ways:

1. Higher standards of training are being required of candidates for appointment.

2. In determining promotions, superintendents place the chief emphasis upon the professional items, namely, success in improving instruction, professional leadership in the system, and professional training.

3. In the larger cities, principals are practically all freed from the duty of regular classroom work.

4. The tendency in city systems is toward relieving the principal of clerical and routine duties.

5. The optimum size of school (1,000 pupils) recommended by superintendents is not large enough to subordinate professional leadership to administrative duties, while it is of sufficient size to demand professional abilities and ideals.

6. The professional vitality of large numbers of principals is a significant condition.

7. The recognition of the professional basis as the proper one for the erection of salary schedules justifies the hope that salary provisions will eventually make continuous professional improvement feasible for all principals.

8. The relation of the principal to the courses of study admits him to recognition as an educational expert.

9. The responsibility of the principal as an educational leader in the community is being recognized by both superintendents and principals.

THE PROBLEM OF SCHOOL FINANCE

ORVILLE C. PRATT
Superintendent of Schools, Spokane, Washington

Finance is a factor in every phase of civilized life. Whatever the other problems may be which perplex us individually or collectively, finance is inevitably one which must be taken into account. Human nature is such that wants tend to outrun the means for meeting them. Hence the universal problem of finance.

Education is only one of the many things that people want. It must compete for financial support with every other desire of the human heart. Moreover, in this competition it is relatively at a decided disadvantage. Schooling is an investment not made ordinarily for the direct personal advantage of the investor, and its benefits, instead of being enjoyed to the full at once, are long deferred. It may be as easy for people to spend for their own children as for themselves, but this generosity does not ordinarily extend to the children of other people, and it is a matter of common observation that children and money are apt to be found in inverse ratio. Then, too, it is easier for everyone to spend for immediate enjoyment than for that which will reach fruition only after long years.

Teachers have never concerned themselves sufficiently with the problem of school finance. As a group, we have seemingly assumed a somewhat fatalistic attitude toward it. We are not indifferent to it when we are pinched by the lessened purchasing power of the dollar, but our expectation of a genuine remedy seems only half-hearted.

Possibly it may be bootless to discuss the causes for this situation. Is it, as some critics imply, that teachers are rather impractical creatures, given over to visionary and theoretical considerations, and oblivious to matters which appeal to the business man? Or is it that the ideal of service, traditional with teachers, appears incongruous with financial affairs? Or, as seems most

likely, is it merely that teachers have not turned their attention particularly in this direction?

Whatever its causes may be, this situation should not be allowed to continue. Our position would be much strengthened, and we should at the same time be better teachers if we had a thorough, first-hand, practical grasp of the problem of school finance. We ought to be the leaders in our communities in all matters relating to education. Ignorance is always weakness. We can as ill afford to be in ignorance of the financial support of the schools as can the business man of his finances.

There is an additional reason for the consideration of this topic at this time. Most of the state legislatures have recently adjourned after being in session since early in January. Whatever has been or has not been done in our legislatures must stand unchanged for two years. These are two years of opportunity. The best time to begin preparing for a meeting of the legislature is not on the day it convenes, but on the day the previous legislature adjourns.

For these various reasons I now invite your attention to some of the rudiments of school finance. In doing this it is necessary to make use of some statistical material, but the attempt will be made to limit the discussion to easily verifiable facts and figures.

One of the things we should have a clear understanding about is price. Price is the measure of value in terms of money. It is determined by the relation between demand and supply, not only of the articles priced, but of money also. If demand increases while supply remains constant, the price of commodities will rise. If the supply increases while the demand remains constant, the price will fall.

Several factors entered into the rise of prices in connection with the war. The war gave an extraordinary impetus to demand, and, by removing all able-bodied men from production, greatly lessened supply, thereby doubly boosting prices. A similar increased demand and lessened supply in the case of labor had a like effect on wages and thereby became a factor in raising prices. Again, the importation of gold to maintain trade balance, the issuance of bonds to finance our participation in the war, and the general expansion of credit—all had the effect of increasing prices.

Prices are never fixed or stationary. Even in normal times the price curve is constantly rising or falling. From shortly after the Civil War until 1893, the movement was in general downward. After 1893 the trend of prices was gradually but steadily upward until the recent war suddenly sent them skyward with an increase of 100 per cent over pre-war prices. The peak of high prices was reached about the middle of 1920, and since then the trend has been downward again.

The index number is a device used by statisticians and economists to indicate the effect of shifting prices upon the cost of living. Such an index number expresses the ratio between the average of the prices of a large number of essential commodities at one time in comparison with such prices at another time. The commodities are not of equal value in arriving at the index number, but are duly weighted in accordance with their importance in consumption. In the United States there are five index-number systems. Of these the most complete and most carefully weighted is that of the United States Bureau of Labor Statistics.

Every investigation of the cost of living shows that the war had the effect of doubling it. Royal Meeker, United States Commissioner of Labor Statistics, found that $1,000 in December, 1914, would buy as much as $1,954 in December, 1919, and prices increased for six months after the end of the period covered by his investigation. The National Industrial Conference Board, a federation of manufacturers' associations, maintains a research department, which reported the cost of living in July, 1920, as 104.5 per cent higher than in 1914. There can be no doubt that the cost of living increased not less than 100 per cent in the six years from July, 1914, to July, 1920.

It is the discrepancy in the variation of prices, and not the general trend of prices upward or downward, that causes trouble in a period of rapidly changing prices. Price is expressed in money, and money is the medium which makes possible the exchange of services. If all prices varied together, the purchasing power of everyone would remain unchanged. If any service or commodity lags behind the general increase in prices, people generally profit at the expense of those who render such service or make such com-

modities. In the forward march of prices during the war and after, the salaries of teachers fell far to the rear of the procession.

The increase in the cost of living had the effect of cutting salaries in two as measured by purchasing power, except to the extent that the decrease in purchasing power was offset by an increase in salary. When the stress of war came, the taxing machinery proved to be too inelastic to permit the increase in the number of salary dollars to keep pace with the decrease in dollar value. As a result, all through the six years of rapidly rising prices, teachers suffered increasingly from the constantly shrinking purchasing power of their salaries. For instance, when prices reached their peak in 1920 with an increase of 100 per cent, the salaries of Spokane teachers had increased only 30 per cent. It is doubtful if at that time the salaries of teachers anywhere had increased more than 50 per cent.

The use of the present dollar as the measure of value vitiates the thinking of people about salaries. Not taking sufficiently into account the change in the value of the dollar itself, they think of increase in salary as if that denoted increase in that which teachers receive in actual purchasing power. In order to think straight about salaries it is essential to remember that the dollar itself rises and falls in value. A general rise in prices is only another way of expressing a fall in the comparative value of money.

The dollar is so inaccurate and unsatisfactory a measure of value that one of our foremost economists, Professor Irving Fisher, of Yale University, has suggested the substitution of an index-number dollar of unvarying purchasing power in place of the present gold-standard dollar.

Whether or not it is practicable to have an index-number dollar with which to maintain uniform purchasing power, it should not be too much to expect the public to protect teachers by increasing the number of dollars which they receive sufficiently to compensate for the lessened value of such dollars. To make this possible involves a readjustment of the tax machinery of the various states to meet the conditions created by the war. This fact suggests the imperative need for teachers to have an intimate knowledge of taxation and tax reform as phases of the problem of school finance.

Taxes are the expenditures which people make for what they buy and use in common. Such collective use of things is an index of civilization. As civilization advances, men become more and more co-operative and interdependent. It is better for a sidewalk to be made and paid for collectively than for each individual householder to determine for himself whether or not he will have a sidewalk in front of his property. It is better for a city to own many books of many kinds in a public library than it is for each person to attempt to own all the books he needs for his own use. It is better for a community to have public schools than it is for each parent to try to teach his own children.

The trend of civilization is in the direction of meeting needs collectively, rather than individually. This implies a corresponding trend toward increasing collective expenditures. In other words, under modern conditions taxation tends constantly to increase because people feel that many phases of life would be made better and more secure by common action. Every time a state legislature meets, new laws are enacted which provide for various kinds of uniformity and necessarily involve increased expenditures. In every state and in the nation as a whole, taxation has increased faster than population. In the last decade in Washington the population increased 18.6 per cent; property valuation increased 31.7 per cent; and the cost of state government increased 260 per cent.

Because of these constantly expanding community expenditures to meet community needs, former taxing methods and machinery are no longer adequate. This inadequacy, manifest long before the war, has now reached a critical state because of the war. Practically every state in the Union is searching for, or trying out, new solutions to the problem of taxation.

Schools of all kinds everywhere are suffering from the virtual breakdown of taxation. Because of the shrinkage in the purchasing power of the dollar, constitutional or other legal taxing limits are such that the revenue from taxation is insufficient to maintain them on the former level of efficiency. Merely to raise present legal taxing limitations is only a temporary and makeshift solution to the problem. What is needed is a thoroughgoing revision

of taxing methods and machinery. Already thirty-four states have brought about some degree of reform into their tax systems, and all the states have the matter under discussion.

The state of Washington well illustrates the uniform property tax idea which has broken down. The state constitution provides that "all property in the State not exempt under the laws of the United States or in this Constitution shall be taxed in proportion to its value . . . . so that every person or corporation shall pay a tax in proportion to the value of his, her, or its property." It is such a clause in state constitutions which has been the chief stumbling-block in the way of tax reform.

In the thirty-two years of its existence as a state, Washington has swiftly passed through all the stages of transition from pioneer to modern conditions of living. In its early days practically all its wealth was in tangible forms, such as land, houses, live stock, furniture, etc., which could be seen and taxed. Now it is estimated that more than two-thirds of its wealth is in intangible or invisible forms, such as mortgages, notes, credits, accounts, money, certificates of deposit, tax certificates, judgments, bonds, stocks, and warrants, much of which escapes taxation. Previous to 1907 this intangible property was subject to taxation, but very little was placed upon the tax rolls. In that year the legislature legalized the situation already existing by exempting all intangibles except money from taxation. Money is still subject to taxation but with what degree of success may be judged from the fact that while the deposits in the Spokane banks average about fifty million dollars, the total assessed valuation of all personal property in Spokane, including money, is less than fifteen million dollars. It has not been found practicable any place to tax intangible property on the same basis as the tangible is taxed.

Out of this tax situation has grown in Washington as elsewhere a train of evils and gross inequalities. It is estimated that not to exceed one-tenth of the personal property in Washington is assessed and that the taxes on that one-tenth are paid by those least able financially to pay. One of the accepted tenets in taxation is that people should pay in proportion to their ability. As it works out in practice, with a general property tax as a basis, they pay rather

in proportion to their inability to escape. As a result, while intangible property virtually pays no tax, real estate is taxed to a degree that threatens confiscation. In Spokane and in many other cities the owners of hundreds of vacant lots are permitting them to revert to the cities in lieu of further payment of taxes on them.

At the same time the fortunate owner of intangible property reaps all the benefits of government without paying his proportionate share of governmental expense. For instance, suppose a man has a thousand dollars saved up which he wishes to apply on the purchase of a five thousand dollar piece of property as a home. He borrows four thousand dollars and gives a mortgage for that amount on the property which is thereafter assessed in his name. He has a thousand dollars invested in a home but must pay taxes upon its total assessed valuation, while the owner of the mortgage, with an investment four times as great, pays not a cent of tax upon his investment. A recent news item in the local press stated that a Spokane man had invested $1,250,000 in 5½ per cent bonds. It is government which renders such an investment secure and income thereon certain. From the standpoint of equity it is impossible to justify the exemption of such an investment from taxation. There are extant in the United States more than thirty billion dollars of tax-exempt government securities.

Out of the breakdown of the general property tax, characteristic of every state, there has grown up an insistent demand for tax reform and certain marked tendencies in that direction.

Among these tendencies is the trend from local to larger taxing units. This trend is well illustrated by the recent report of the School Code Commission in Washington. This commission recommended the substitution of the county-unit plan in place of the obsolescent district plan with its inevitable gross inequalities in taxation; and also that the burden of taxation should be shifted so that the state would assume a greater proportion of it. The same tendency appears in the report of the Washington State Tax Commissioner for 1918. In this report he asserts that "township assessment is a hindrance to that equality in taxation for which we are striving. . . . . Concealment, falsehood, evasion, cajolery, and political wire-pulling are the rule."

Another noticeable trend in taxation is away from exclusive reliance upon a general property tax and toward the inclusion of some form of personal tax. In no other country in the world is the general property tax the chief source of public revenue, and it cannot continue to be such in this country. Poll taxes, gross-sales taxes, and income taxes are evidences of the tendency toward personal taxation. Intangible property cannot be successfully taxed except by holding that persons as well as property owe tax allegiance to government.

A closely related trend in taxation is that of basing it upon ability to pay rather than upon benefits received. Upon this basis an income tax is the best form of taxation. It seems likely also that such a tax is most nearly in accord with benefits received. The poll tax and the gross-sales tax place a disproportionate share of taxation upon those of little means. The tide in taxation is certainly in the direction of the income tax. It is probably only a question of time until every state will adopt the income tax as supplemental to, if not a substitute for, the general property tax.

From the standpoint of this analysis of taxation and its tendencies, let us examine the actual tax burden in state and nation. What are the people actually paying for the things which they enjoy in common? How true is it that the burden is becoming unbearably heavy? To what extent is the persistent outcry of "retrenchment" justified?

So far as the nation is concerned, the war has had the effect of increasing taxes at least fourfold. The disbursements of the general government rose from about one billion ($1,147,898,991) in 1917 to almost nine billions ($8,966,532,266) in 1918, and to more than fifteen billions ($15,365,362,742) in 1919. For 1920 the appropriations were more than five and one-half billions ($5,686,005,706), and it will be many years before they drop below three billions. The interest charge alone on the twenty-four billions ($24,010,000,000) of national indebtedness is greater than the total pre-war cost of the government. The average tax for national purposes in 1920 was $53.

An analysis of the purposes to which these enormous taxes were devoted is illuminating from an educational point of view.

Of the expenditures for 1920, past wars cost almost four billions ($3,855,482,586), or 68 per cent. Preparation for future wars cost almost one and one-half billions ($1,424,138,677), or 25 per cent, making $0.93 out of each tax dollar that went for past or future wars. Of the remaining 7 per cent, 1 ($57,093,661) only was devoted to education, science, and research. The amount spent by the general government in 1919 was approximately the same as that spent for all educational purposes in the United States during the last half-century.

In view of this almost incredible situation are educators asking for an undue and exorbitant portion of national expenditure when, through the Sterling-Towner Bill, they request that two more cents out of each tax dollar be used for education? Retrenchment in national expenditures is undoubtedly urgently needed, but scarcely less urgent is the need for a shift in expenditures which will give recognition to the fact that an alert, intelligent, well-educated people is much more important in safeguarding the life of a nation than are battleships and armies.

Education has heretofore been regarded as a function of the states, rather than of the nation. It is to the states, therefore, that we must look if we attempt to ascertain the place which education holds and the tax burden which it imposes. The situation in Washington may be taken as fairly typical of the attitude of the people toward education and its financial support in the more advanced states.

The total of all direct taxes for all governmental purposes, local and state, levied in Washington in 1920 for payment in 1921 is $72,665,820. The 1920 census gave the population of Washington as 1,356,314. Dividing the first number by the second, we get $53.58 as the per capita cost of state and local government of all kinds in Washington for 1921. When these facts, compiled by the State Bureau of Inspection, were published, they were commented on by the local press as "appalling facts on taxation," a "stupendous total," pointing the way to "the vital need of rigorous retrenchment."

Whether retrenchment is or is not needed cannot be determined by the mere bulk of taxation. Rather it is a matter of balance

and proportion. Increase or decrease in the amount which people spend collectively in taxes should depend upon the wisdom of expanding or contracting the service which they are purchasing in common. Concerning any item of a budget, public or private, there is one pertinent question to be answered: Is it, everything considered, a bargain?

Applying this principle to education, whether more or less money should be spent on it depends upon whether an increase or a decrease in such expenditure is the wiser course. The total amount of tax levied in Washington for education by the state, by counties, and by local districts is $28,490,862. This includes the levy for higher institutions as well as for the public schools and is a per capita expenditure of $21. If this amount now being spent for education is inadequate for the purpose, if this money rightly regarded is not merely an expense but a most valuable form of investment, then increased expenditure, rather than retrenchment, is the vital need.

There has been a constant expansion in the service rendered by education. Merely to enumerate some of the newer features of school work is sufficient to indicate how much greater this service is now than it was some years ago. Among the more important features added are evening schools, physical education, manual training, household arts, parental schools, medical inspection, vocational education, and various special classes. Patrons demand better and more sanitary buildings, better heating, lighting, plumbing, and equipment, gymnasiums, playgrounds, and auditoriums.

Aside from rendering a greater service than formerly, the schools are rendering it to a greater proportion of the population and for a longer time. Compulsory and part-time education make additional demands upon the attendance of children. In the last thirty years the registration in public high schools in the United States has increased more than eleven times as fast as the increase in population. The length of the school year has increased greatly. Kindergartens reach downward, junior colleges and higher institutions upward. Public education seems destined to be for all of the children of all the people all of the time.

In considering the wisdom of expending $21 per capita for education in Washington, the main question cannot be as to the amount of this expenditure, but as to the returns from it as compared with other possible ways of spending. In an open letter on "Estimated Expenditures for Luxuries," dated June 11, 1920, the Secretary of the Treasury places the annual expenditures for luxuries at $22,700,000,000, which is more than ten times the amount per capita spent for education in Washington. The per capita expenditure for tobacco in the United States is greater than for education in this state. The amount spent in the United States for "luxurious food alone is six times as great as the total budget for education" throughout the nation.

In the face of such facts and in view of the critical situation of the schools, particularly in respect to an adequate supply of trained teachers, retrenchment, however desirable it may be in other phases of government, as applied to education is a false economy. The future welfare of the state and nation demands greater and not less expenditures for schools.

The war, with its inescapable burden of national indebtedness and expenditure and its legacy of high prices, has brought about a crisis in educational affairs. The general property tax has broken down and some more equitable and satisfactory system must supplement it or take its place. What is our duty as educators? Are we to sit down passively in the presence of this educational crisis, or shall we actively endeavor to shape the outcome?

The answer to these questions, it seems to me, is that the problem of school finance is primarily our problem. If we genuinely believe in education, if we have the right kind of faith in its efficacy as a solvent of social problems, if we deserve our positions of leadership in education, if we have that vision without which the people perish, we shall do our utmost to aid in the solution of this problem. We should center attention upon it during the next two years. We should organize and work along the lines of research and publicity. Paraphrasing van Dyke, "of all who live we are the ones by whom this work can best be done in the right way."

A HANDWRITING SCALE FOR THE PUPIL

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This article describes a scale[1] or, more precisely, a series of scales devised to enable the pupil to measure his own handwriting. The scales are printed conveniently in the front of a book of blank paper which is to be used by the pupil for composition or other written work. The tablets containing the scale are to be sold at the price of the ordinary blank book. The pupil, therefore, has the scale conveniently before him whenever he uses the book. He is thus constantly reminded of the presence of handwriting standards and has an instrument conveniently at hand to enable him to apply the standards to his own writing.

There are in all four separate scales, each of which is designed for pupils of a particular grade or of a pair of grades. The use of separate scales for pupils at the different levels is a recognition of the change in the character of the writing of pupils with advancing maturity. This change in the character of the writing takes place most quickly in the first three years. There is therefore a separate scale for the use of Grade II. The handwriting of the pupil of the first grade is hardly sufficiently developed for the use of a scale. There is also a scale for Grades III and IV, another for Grades V and VI, and another for Grades VII and VIII.

This use of a series of scales instead of a single scale for the entire school makes it possible to use the same kind of marking units as are employed in other subjects. The grades of the specimens are expressed in percentage terms. The lowest specimen is marked 55 and is considered unsatisfactory. The other specimens range from 65 to 95 and may be designated poor, fair, good, and excellent. According to this system, the pupil whose rank is fair in one grade must write better than a pupil whose rank is

[1] *Handwriting and Measuring Tablets.* Prepared by F. E. Clerk, J. B. Welles, and Frank N. Freeman. Columbus, Ohio: Dobson-Evans Co.

fair in the grades below. The pupil who makes progress more rapidly than the average of his class will raise the rank of his writing. In brief, the relative system of marking is used. This system is the one in almost universal use in the school, and it is a matter of convenience to grade handwriting by the same method.

As already indicated, there are five units or grades of excellence represented in each scale. This gives seven different grades or units for the scales designated for Grades III to VIII. This will be shown in particular in the description of the equivalent specimens of the various scales.

Since the scale was constructed by giving the median grade of 75 to the writing of median quality, the scale may be used as a means of expressing the relation of the pupil's standing to standard quality as well as a measuring device. That is, if the pupil's handwriting is scored 75, it is roughly equivalent to median quality. If it is scored 85, it is above median; and if 65, below median. This type of rating is, of course, not very exact, since the same scale serves for two grades, but the difference in the progress between the pairs of grades which are united in the same scale is not great enough to introduce an important error into this comparison.

The purpose of this scale and of its inclusion in the pupil's writing-book is to make it convenient to require the pupil frequently to measure his own writing. In order to score his writing it is not necessary for him to keep a separate scale on hand and to spread it out before him when he wishes to grade his writing. He has merely to turn to the front of his tablet and compare his own writing with the specimens in the scale.

The presence of the scale in his blank book, where he looks at it and uses it frequently, makes the child so familiar with the specimens which represent different grades of writing that a given score means something to him besides an abstract number. It stands for a concrete representative of the quality in question. The score can be used, however, as in the case of any other scale, to construct charts for the individual pupils or for the class as a whole, in order to show their standing or their progress from time to time.

It is good practice to supplement the rating of the pupil's writing which is made in terms of a scale, by keeping a series of specimens written at monthly intervals, so that he may discern progress which is finer than can be expressed in the units of the scale. This type of concrete progress record also enables the pupil to analyze his improvement and to trace the particular aspects of his writing in which he has gained. Especial emphasis should be placed in teaching on the pursuit by the pupil of special aims, such as the increase in uniformity of slant or alignment, the improvement of certain letter forms or of the spacing between words or lines. Such definiteness gives meaning to practice and makes progress more perceptible.

The scale was constructed as follows: The specimens of writing were first collected from various cities in widely different parts of the country, in order to secure representatives of as wide an area as possible. In spite of this distribution of the source of the specimens, however, their general type was the same. For example, no vertical writing was included. The type may be described, for convenience, as business writing, though there is no certainty at all that the term is a good description of this type. It stands, however, for a well-recognized style. Papers were secured from the following cities: Boston, Grand Rapids, Montclair, New Orleans, Schenectady, Seattle, and St. Louis. The selection is wide enough to make the standard represented in the scales fairly reliable. All the specimens written by a given grade were used in making the scales.

The papers written by the pupils were prepared according to printed directions sent to the teachers. In addition to this, paper, ink, and printed copies of the texts which the pupils were to write were also sent. Since the absolute speed of the writing was not to be taken into account, and since it requires considerable preparation to give a test in which the pupil writes from memory, the pupils were allowed to copy from the printed selections which were sent to them. The directions, however, required that a little preliminary practice be given. Since, further, the relative speed with which the different specimens were written was to be taken

into account in the selection of specimens for the final scale, the pupils were allowed to write for a limited time, namely, two minutes.

The first step in the selection of the specimens to be used for the scale was to exclude those that were written unusually slowly or unusually rapidly. This was done by selecting from each grade those in the middle third in speed. As a result, the specimens of the scale represent writing of ordinary speed. This fact may be taken into account in grading the writing by means of the scale. It is possible that extreme rapidity or extreme slowness modifies the character of the writing. If this is the case, specimens written at a speed near the typical speed for the grade may be said to be more representative than writing which is either very fast or very slow.

After this selection of the specimens on the basis of speed, the papers were graded for quality. Each paper was graded by three persons. The first two did the work independently, and the third examined all the specimens in which the first two disagreed, and attempted to arrive at a true rating by critical examination. The specimens from each grade were then arranged in the order of their quality, for the purpose of making the distribution to be described.

The persons who graded the papers had all had intensive training in the use of handwriting scales, and the mean variation of their grades, made with the Ayres scale, was in each case less than five points.

The scale used in making the judgments was the Kansas City Handwriting Scale. This was chosen because of the fine units into which it is divided and because the specimens are of homogeneous type, and of the same type which was to be scored in making the scale.

It was the opinion of the authors of the scale that this method of grading the specimens was probably as accurate as the method of making paired comparisons or of arranging the specimens in serial groups according to the general impression of their quality. It is, of course, very much less laborious than these other methods. Furthermore, since this method gives all the specimens definite numerical ratings, it facilitates determining the relation of the

various grade scales to one another. By setting the grade scales into relation a general chart was constructed.

After the specimens of each grade were scored, they were divided into five groups. The number in each group was so arranged that the various groups represented equal distances on the base line of a normal-frequency surface, that is, the percentages in the various groups were respectively 7, 24, 38, 24, 7.

The median score of the papers of each group was next found and taken to represent the quality of the group. These scores are given in Table I.

In order to find specimens for the scale of a quality as near to these median scores as possible the specimens of each score value were arranged in order of excellence and given serial numbers. The specimens for the scale were selected after careful examination from among the few specimens near the median serial numbers. The choice sometimes rested on other than the papers at the exact median on account of such disqualifying features as peculiarity of style or faintness of line.

TABLE I

Grade	Very Poor (Failing)	Poor	Fair	Good	Excellent
II	7.8	8.6	9.5	10.4	11.1
III	7.3	8.0	8.9	9.9	10.9
IV	7.1	7.8	8.7	9.8	10.9
V	7.8	8.6	9.6	10.7	11.9
VI	7.3	8.1	9.2	10.7	12.3
VII	8.5	9.6	10.9	12.7	13.9
VIII	9.1	9.9	10.7	11.9	13.4

Two facts are evident from an inspection of Table I. The second grade stands in contrast to the other grades. On the face of the returns, the writing of this grade is superior to that of the two succeeding grades. This obviously does not mean that the second-grade pupils are more skilled in writing than the third-grade pupils, but it means that the type of their writing is so different that it is impossible to rate them comparatively on the same scale. At least two of the reasons for this difference are that the second-grade specimens were written in pencil and that they were written much larger and in a different style.

The second fact is that, in this study at least, the grades advanced in quality by pairs. Taking the grades singly, many irregularities in progress may be found. If we average the scores for Grades III and IV, Grades V and VI, and Grades VII and VIII, the results are as shown in Table II. The data in this table are represented graphically in Figure 1. The advance in these

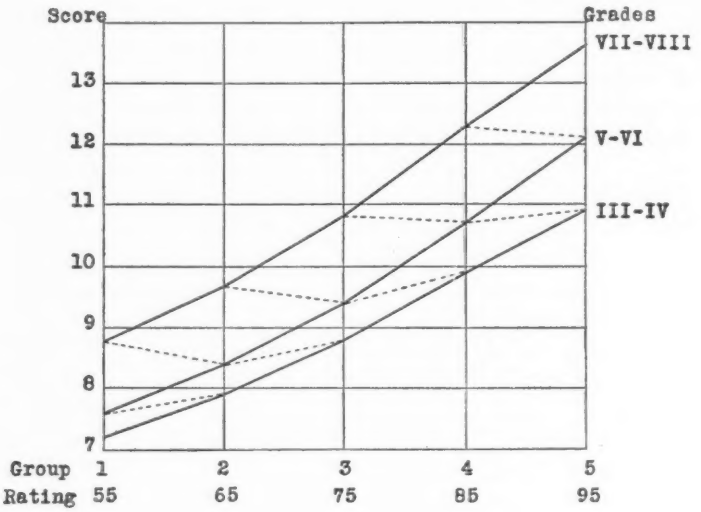

FIG. 1

scores is fairly regular. The scores for Grades V and VI, however, are low in comparison with those for the grades below and above them. This is especially true in the case of the three lower groups. This difference in rate of advancement has not been reported in previous surveys, and the evidence before us does not indicate whether it is due to the actual quality of the specimens themselves, the characteristics of the scale which was used in scoring the specimens, or the method by which the scoring was done.

Horizontal dotted lines connect the points on the successive scales which are most nearly equivalent in rank. Thus, the middle specimen of the scale for Grades VII and VIII is nearly equivalent

to the fourth specimen for Grades V and VI, and the fifth specimen of Grades III and IV. This comparison was made the basis of

TABLE II

Grades	Very Poor	Poor	Fair	Good	Excellent
III and IV...	7.2	7.9	8.8	9.9	10.9
V and VI....	7.6	8.4	9.4	10.7	12.1
VII and VIII.	8.8	9.7	10.8	12.3	13.6

the general chart on which the different scales are brought into association with one another. The arrangement of this chart is illustrated in Table III. In accordance with this arrangement,

TABLE III

ARRANGEMENT OF SPECIMENS IN THE GENERAL SCALE

Grades VII and VIII			55	65	75	85	95
Grades V and VI		55	65	75	85	95	
Grades III and IV	55	65	75	85	95		

a specimen of a given scale is represented as equal to the specimen of next higher rank of the next scale below. For the purpose for which the scale is designed, it would not be feasible to attempt to indicate the relations of the scales more precisely than this.

It is frankly recognized by its authors that this scale was not designed with as elaborate statistical technique as has been used in constructing some of the other scales, but it is believed that it is valid in the essential features of construction and that it is especially adapted for use in the schoolroom.

ARITHMETICAL COMBINATIONS

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THE RELATIVE DIFFICULTY OF THE ADDITION COMBINATIONS

One of the large problems confronting us in the scientific development of education is the preparation of material for corrective work and the development of new methods of instruction, based upon experimentation. The following study was made with a view to carrying out this program in one field of elementary instruction. It was the writer's opinion that many pupils make low scores in arithmetic tests because they are deficient in a few difficult combinations rather than equally deficient in all combinations. If we can locate the difficult combinations and concentrate drill on them rather than spend time on the combinations already fairly well mastered, we shall be able to make more rapid progress. The following investigation was made for the purpose of determining the difficult combinations in addition.

The apparatus consisted of a frame similar to a tachistoscope in which a dropping screen exposed a card on which one of the combinations had been printed. At the instant the screen was tripped by the latch the experimenter started a stop watch. The subject gave the sum as quickly as possible. As soon as the subject began to vocalize the sum, the watch was stopped. The combination was then withdrawn, and the time recorded on the back of the card. The screen was raised, another combination was inserted, and the experiment was continued as before.

It will be noted that the time required for the subject to give the sum of any combination involves several factors: (1) the time required for the screen to drop, (2) the time of recognition of the two digits on the card, (3) the time of recall of the association of these digits with their sum, and (4) the reaction time for the vocalization of the sum.

After each subject had given the responses to the eighty-one arrangements of the forty-five combinations, he was required to

name a single figure exposed on a card in the same way. Nine cards, containing the figures from 1 to 9, were exposed in a miscellaneous order. The time of one of these responses involves the dropping of the screen, the recognition of a digit, and the reaction time of vocalization. No appreciable variation was found in the time of response of any individual to the different cards and very slight variations between the responses of different individuals. It is clear, then, that the *time required for the recall of the association of the sum and the digits* is the variable factor in the time of responses to the various combinations. Those combinations for which this association is most easily recalled will have the shortest time of response, and the difficult ones will require the longest time.

Eighty-six pupils from the third, fourth, fifth, and seventh grades of the training school and one arithmetic-methods class of the State Normal School at Whitewater, Wisconsin, were tested in this manner.

The median time responses for the various combinations were then computed for each of the five groups. The combinations which proved difficult for the third- and fourth-grade groups also proved difficult for the upper-grade groups and for the adult class. In order to eliminate any minor variations, the final median time responses were computed from the medians of the five groups.

In carrying out the experiment care was taken to determine the effect of the arrangement of any two digits on the time response. For example, will it take longer to recall the sum, 14, for the arrangement $\frac{5}{9}$ than for the arrangement $\frac{9}{5}$? It was found that in nineteen of the combinations the time of response was slightly greater when the larger digit was above; in fourteen combinations the time of response was slightly greater when the smaller digit was above, and in three cases the time was the same for the two arrangements. These facts indicate that the arrangement of the digits in a combination does not seem to influence greatly the time required for giving the sum. The average of the medians for the two arrangements of each combination was taken as the time response for that combination.

The various combinations were then arranged in order from the one with the shortest time of response to the one requiring the

longest time. The forty-five combinations were then divided into three equal groups on this basis, which for the purposes of this discussion will be designated the easy group, the medium group, and the difficult group. Table I shows the three groups

TABLE I

Easy Group		Medium Group		Difficult Group	
Combination	Response Time in Seconds	Combination	Response Time in Seconds	Combination	Response Time in Seconds
5+5	1.07	6+4	1.23	6+3	1.42
4+1	1.13	3+3	1.23	6+7	1.42
5+1	1.13	8+8	1.23	8+7	1.43
6+1	1.13	7+7	1.25	7+4	1.44
1+1	1.14	6+6	1.26	9+2	1.46
4+4	1.14	9+9	1.27	8+5	1.47
2+1	1.14	6+2	1.27	9+4	1.50
8+1	1.15	7+3	1.27	7+5	1.50
9+1	1.16	8+2	1.28	9+8	1.51
2+2	1.17	4+2	1.28	8+3	1.51
3+1	1.18	5+2	1.31	9+5	1.53
7+1	1.19	6+5	1.34	8+6	1.54
4+3	1.19	5+3	1.37	9+6	1.57
5+4	1.22	8+4	1.39	9+3	1.57
3+2	1.22	7+2	1.40	9+7	1.81

and the time of response for the various combinations. It appears from this table that all the easy combinations have sums that do not exceed 10; that with one exception the sums of the very difficult combinations exceed 10; and that the doubles are relatively easy since all of them fall in the easy group or the first half of the medium group.

Some of the pupils gave interesting reactions when questioned about the process that they used in obtaining the sums of combinations requiring long time responses. One girl, who required an especially long time to give the sum of 5 and 7, explained the process in this way: "5 and 5 are 10 and 2 are 12." She was a specialist on doubles and split the 7 into a 5 and a 2 so that she might have a 5 and 5 combination to which she could then add the remaining 2. This required a subtraction and two additions, thus explaining the long time required for her response to that combination. She added 6 and 9 as follows: "6 and 6 are 12 and 3 are 15." She gave similar reactions to 5 and 8; 7 and 9; etc. Another pupil required a long time for the sum of 6 and 9. He

explained his process as follows: "6 and 10 are 16; 6 and 9 are 1 less than 6 and 10; then 6 and 9 are 15." He had to think through a similar form every time any number was added to 9 and of course gave much slower responses. Another pupil could not give the sums directly but had to go through the form of saying "5 and 9 are 14" instead of merely saying "14." These individual reactions are significant from the standpoint of methods of teaching. We should be careful about letting pupils acquire forms or roundabout schemes for securing a result in the lower grades which will prove a handicap to them in the upper grades.

The writer also tested an expert in rapid calculation and found practically no variation in the time of his responses to different combinations. This represents the ideal toward which we should strive in teaching the combinations—to master equally well all of the combinations. The forty-five combinations were arranged into three drills so that this equal mastery could be achieved. The two arrangements of each combination of two different digits are given, and each double is repeated so that equal stress will be placed upon all combinations in the same group.

DRILL A—EASY COMBINATIONS

4	9	3	8	1	4	1	1	3	4	1	6	1	2	5
5	1	4	1	3	4	4	8	2	3	5	1	1	2	5
3	2	5	5	1	2	1	4	5	7	1	4	2	1	1
1	3	1	4	7	1	9	1	5	1	2	4	2	6	1

DRILL B—MEDIUM COMBINATIONS

4	3	7	8	6	7	4	9	8	6	2	4	2	6	3
6	3	3	8	2	7	2	9	2	6	6	8	4	5	3
3	2	5	6	9	5	7	2	6	3	8	2	5	7	8
7	5	3	4	9	6	2	8	6	5	4	7	2	7	8

DRILL C—DIFFICULT COMBINATIONS

3	3	7	6	2	5	3	4	5	9	6	5	6	6	4
6	9	8	7	9	9	8	9	7	7	9	8	8	3	7
7	8	8	7	7	9	8	7	9	9	8	9	8	9	9
6	9	5	9	5	2	6	4	8	5	3	4	7	3	6

A seventh-grade class was timed in giving orally the sums in Drill A. The median time for giving the thirty sums was 20 seconds. All pupils who had not finished Drill A in 20 seconds were required to practice on that drill until they had reached the class standard. After finishing Drill A in 20 seconds or less, each pupil was required to reach the same time limit for Drills B and C. The aim of this plan was to cease drill on the easy combinations when a suitable standard had been reached and to concentrate attention on the difficult combinations and have them equally well mastered.

This seventh-grade class was slightly below the Cleveland seventh-grade median for Set A of the Cleveland Arithmetic Test before the drill was given. A year after the drill period was finished (thus allowing time for the immediate effects of the special drill to pass away) this class was again tested on Set A of the Cleveland Arithmetic Test, and the class median was 75 per cent greater than the Cleveland eighth-grade median. This experiment shows the excellent results that can be secured by placing the emphasis where it belongs—upon the difficult combinations and making them equally well mastered with the easy group.

THE RELATIVE DIFFICULTY OF THE MULTIPLICATION FACTS

The relative difficulty of the simple multiplication facts was determined in the same way. Forty-two pupils were tested individually on the 100 simple multiplication facts. Table II shows the median time responses in seconds and also the number of incorrect responses made to each multiplication fact.

A study of Table II shows that there is little relation between the length of the time responses and the number of errors. For example, 9×9 and 8×6 have long time responses and no errors, while 8×0 and 9×0 have short time responses and a large number of errors.

It was observed that several pupils who gave incorrect responses to the first two or three products involving zero as a factor soon saw their error and gave correct responses to the remainder of the products involving zero as a factor. Other pupils who gave incorrect responses to all of the products involving zero as a factor

were shown the principle that "zero times any digit or any digit times zero gives *zero* as a product." In the second presentation of the cards they had no difficulty in giving the correct responses to all the products with zero as a factor. This shows that the

TABLE II*

Easy Group			Medium Group			Difficult Group		
Multiplication Fact	Time Response in Seconds	Number of Errors	Multiplication Fact	Time Response in Seconds	Number of Errors	Multiplication Fact	Time Response in Seconds	Number of Errors
1×7	.96	0	2×2	1.11	0	4×8	1.18	6
6×1	.96	0	0×2	1.11	6	9×5	1.18	3
5×1	.97	1	4×2	1.11	1	3×6	1.18	1
1×6	.97	0	2×7	1.12	0	6×6	1.18	0
1×2	.98	1	4×6	1.12	1	7×6	1.18	2
4×1	.98	1	2×5	1.12	0	3×8	1.19	2
1×4	.99	0	2×4	1.12	2	8×4	1.19	13
9×1	.99	0	0×8	1.13	6	2×8	1.19	1
8×0	.99	7	5×3	1.13	1	8×5	1.19	2
1×3	.99	1	6×4	1.13	1	8×6	1.20	0
9×0	.99	6	5×2	1.13	0	6×7	1.22	2
0×1	.99	6	5×4	1.13	0	5×9	1.24	1
5×0	1.00	6	2×3	1.13	1	8×3	1.27	4
1×8	1.00	1	2×6	1.14	0	6×3	1.27	2
0×4	1.00	6	3×2	1.14	0	7×5	1.28	0
8×1	1.01	1	3×4	1.14	1	9×3	1.30	4
0×5	1.02	9	7×2	1.14	0	3×9	1.30	4
2×0	1.02	6	3×5	1.14	2	8×9	1.30	2
0×7	1.02	9	2×9	1.14	0	7×4	1.30	3
7×1	1.03	0	5×6	1.15	2	4×7	1.30	2
0×6	1.03	5	6×2	1.15	2	4×5	1.30	0
0×3	1.03	6	4×3	1.15	2	4×9	1.31	2
2×1	1.03	1	4×4	1.15	2	6×8	1.32	3
3×1	1.04	0	5×5	1.15	1	8×8	1.32	2
1×1	1.05	1	8×2	1.16	4	9×9	1.32	0
1×0	1.05	7	5×8	1.16	0	7×8	1.32	2
0×9	1.06	7	7×3	1.16	0	8×7	1.34	3
7×0	1.07	6	3×7	1.16	1	9×4	1.37	2
3×0	1.07	8	6×5	1.16	2	9×8	1.37	2
4×0	1.08	5	9×2	1.17	0	7×9	1.40	1
0×0	1.09	0	7×7	1.17	0	9×6	1.50	7
6×0	1.10	7	5×7	1.17	2	6×9	1.53	6
1×5	1.10	2	3×3	1.17	6	9×7	1.55	6
1×9	1.10	1	.....	.....	.....	.....	.....	.....

*In this table the first digit is used as the multiplier.

products involving zero as a factor are not fundamentally difficult but that the errors are due either to a failure to present the principle or to the lack of sufficient drill to fix the correct responses.

The difficult facts consist mainly of those with 6, 7, 8, or 9 as multipliers. The multiplier 9, occurring seven times in the difficult

group, seems to be the most difficult of all the multipliers. This is possibly due to the 9's being presented last and to the lack of sufficient drill when the pupil was tiring of the work on the multiplication tables. Additional drill must be placed upon these difficult facts to make it possible for the pupils to recall them as quickly as the easy facts. Drills similar to A, B, and C of the addition combinations should be prepared from the table on the multiplication facts and used to make all the multiplication facts equally well mastered.

THE RELATIVE DIFFICULTY OF THE SUBTRACTION FACTS

In conducting a similar experiment to determine the relative difficulty of the simple subtraction facts, twenty-six subjects were tested individually on the 100 simple subtraction facts. Since all of the subjects used in this part of the experiment were adults or older pupils, the median time of response cannot be compared to that of the addition combinations because the younger pupils were included in that part of the experiment and hence increased the length of the time responses. Table III shows the different groups for the subtraction facts.

With three exceptions the difficult group of subtraction facts have the minuends 10 or more than 10. This group corresponds closely to the difficult group in addition. The doubles were found in the easy and medium groups in addition. The corresponding subtraction facts also occur in the easy and medium groups. These facts show the close relation of the addition and subtraction processes.

The majority of the incorrect responses were made to the facts in the difficult group. There does not seem, however, to be any definite relation between the time of response in this group and the number of errors. The total number of errors was approximately 7 per cent of the total number of responses. Over 42 per cent of the responses to $11-9$ were incorrect.

When we consider that the subjects were from the seventh- and thirteenth-year classes, this is an extremely high percentage of error and shows that either subtraction is a very difficult process or that we do not spend enough time in teaching the subtraction

facts and in drilling on them. Every teacher should devise drills in the simple subtraction facts so that the difficult facts shall be made equally automatic with the easy ones.

TABLE III

Easy Group			Medium Group			Difficult Group		
Subtraction Fact	Time of Response in Seconds	Number of Errors	Subtraction Fact	Time of Response in Seconds	Number of Errors	Subtraction Fact	Time of Response in Seconds	Number of Errors
4−4	.80	0	5−3	.98	0	10−6	1.11	1
8−8	.81	0	10−8	.98	0	11−4	1.12	3
0−0	.83	0	6−1	.99	1	9−3	1.12	5
5−5	.83	0	8−6	.99	1	8−3	1.12	0
2−2	.84	0	6−5	.99	0	9−6	1.13	2
1−1	.85	0	6−4	.99	0	11−9	1.13	11
7−7	.86	0	8−1	1.00	1	12−5	1.13	5
3−3	.86	0	9−1	1.00	1	12−9	1.14	4
4−2	.86	0	10−9	1.00	0	12−7	1.15	1
6−6	.87	0	9−7	1.00	2	13−9	1.18	5
9−0	.87	1	10−1	1.00	0	13−6	1.20	2
8−7	.88	0	7−3	1.00	2	13−7	1.20	4
9−9	.89	0	11−5	1.00	4	12−3	1.20	5
2−1	.89	1	7−1	1.01	0	11−8	1.20	1
5−4	.90	0	5−2	1.02	1	14−8	1.20	5
8−0	.90	0	10−3	1.02	1	17−8	1.24	4
3−2	.90	1	12−8	1.02	0	14−5	1.25	1
4−3	.91	0	7−5	1.02	1	15−8	1.27	5
3−0	.91	0	9−5	1.03	0	15−6	1.28	4
6−0	.92	1	10−7	1.04	0	11−2	1.28	5
1−0	.92	0	7−2	1.05	2	12−4	1.30	4
10−5	.92	0	16−8	1.05	0	13−5	1.30	4
3−1	.93	0	10−4	1.05	1	11−3	1.30	10
7−0	.93	0	8−2	1.06	2	13−8	1.30	3
5−0	.94	1	6−2	1.06	0	16−9	1.30	9
8−4	.94	0	9−2	1.07	1	15−7	1.35	3
7−6	.94	1	8−5	1.07	0	14−9	1.35	5
4−1	.95	1	9−4	1.08	2	16−7	1.38	8
7−4	.95	0	14−7	1.08	1	15−9	1.38	3
4−0	.96	0	10−2	1.10	1	13−4	1.40	3
2−0	.96	1	18−9	1.10	3	17−9	1.40	4
6−3	.96	0	11−6	1.10	2	14−6	1.50	7
5−1	.97	0	11−7	1.10	6	.....	.....	.....
12−6	.97	0	.....	.....	.....	.....	.....	.....
9−8	.97	1	.....	.....	.....	.....	.....	.....

THE RELATIVE DIFFICULTY OF THE SIMPLE DIVISION FACTS

Eighteen subjects were tested in division facts to determine their relative difficulty. The same apparatus was used for this experiment as that used in the addition combinations. The division facts were printed on the cards in the form: $3\overline{)12}$. Table IV shows the three groups of these facts. This table shows that

the difficult division facts correspond to the difficult multiplication facts, thus showing the close relationship between these two processes.

TABLE IV

Easy Group			Medium Group			Difficult Group		
Division Fact	Time Response in Seconds	Number of Errors	Division Fact	Time Response in Seconds	Number of Errors	Division Fact	Time Response in Seconds	Number of Errors
4÷2	.88	0	18÷9	1.01	0	28÷7	1.11	0
0÷6	.88	0	20÷4	1.01	0	40÷8	1.11	1
0÷2	.88	0	30÷6	1.01	1	54÷9	1.11	0
0÷7	.90	0	24÷4	1.01	3	45÷9	1.13	1
14÷7	.90	0	0÷4	1.02	0	35÷5	1.13	2
0÷3	.90	0	9÷9	1.02	4	40÷5	1.13	1
12÷2	.90	0	14÷2	1.03	0	36÷9	1.13	4
0÷9	.92	1	3÷3	1.03	3	32÷8	1.14	0
7÷7	.92	1	20÷5	1.03	0	64÷8	1.14	1
4÷4	.93	2	18÷6	1.03	2	36÷4	1.15	1
0÷8	.93	0	6÷3	1.04	1	48÷8	1.15	3
16÷8	.93	0	15÷3	1.04	0	81÷9	1.15	1
8÷4	.94	0	0÷5	1.05	1	24÷8	1.15	1
5÷5	.95	4	12÷4	1.05	3	63÷7	1.15	3
25÷5	.95	0	49÷7	1.05	1	45÷5	1.17	1
10÷5	.95	0	21÷7	1.05	1	54÷6	1.17	3
2÷2	.95	3	35÷7	1.07	1	48÷6	1.20	3
10÷2	.96	0	21÷3	1.07	2	72÷9	1.20	3
9÷3	.98	0	42÷7	1.08	4	24÷3	1.20	2
8÷8	.98	2	27÷9	1.08	1	28÷4	1.20	6
16÷4	.98	0	18÷2	1.08	1	72÷8	1.23	2
8÷2	1.00	0	36÷6	1.08	2	32÷4	1.25	2
6÷6	1.00	0	16÷2	1.10	0	56÷7	1.25	4
12÷6	1.00	0	18÷3	1.10	2	27÷3	1.25	3
12÷3	1.00	0	24÷6	1.10	2	63÷9	1.27	5
15÷5	1.00	1	30÷5	1.10	0	56÷8	1.30	4
6÷2	1.00	0	42÷6	1.10	3	.....	.....	.....

Another significant point in the table is the large number of errors for the easy divisions: 4÷4; 5÷5; 8÷8; and 9÷9. The incorrect response of 0 was given in many cases. These errors were probably due to lack of drill on such numbers.

The complete tables for each of the arithmetical processes are included in this article so that teachers of arithmetic may form drills similar to those given in connection with the addition combinations. By means of these groups we can concentrate the drill where it belongs—on the difficult facts—and thus conserve the time of the pupils to the best advantage.

THE HIGH COST OF TESTING

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The other day the writer was asked for a list of group scales of intelligence available for use in the public schools. Five minutes spent in mentally reviewing recent work resulted in a list of twenty-seven such tests, and this list is probably not complete. Every one of these scales has been developed within the last four years. The length of this list is interesting evidence of the tremendous activity in the field of testing at present. This activity is not confined to work with tests of intelligence, however. A number of examinations have appeared composed of tests of achievement in the different subjects, these examinations making possible comprehensive surveys covering the major portion of the work in a given grade or grades. Besides all these new ventures, there still exist and multiply the tests in arithmetic, spelling, reading, etc., which occupied the entire field a few years ago. The progressive superintendent, interested in educational measurement, assuredly cannot complain of any lack of materials. Rather, he is bewildered by the multiplicity of the offerings.

The fact is, there is a "boom" in tests. The wise school official will try, in such circumstances, to discriminate the good from the bad, and will neither be swept off his feet by the present enthusiasm nor discredit the whole movement because some of the work is injudicious. However, a superintendent or principal is often at a loss to know how to judge the various tests and scales which are brought to his attention. The present paper is simply an effort to present certain very simple ways in which such a school official may, from inspection of sample materials, and before actually investing in the materials for testing, form his own opinion as to their usefulness. The writer will not specifically mention any tests, but will rather consider certain general principles to be observed in evaluating test materials. The reader will find it

easy enough to apply the few practical criteria suggested to any particular scales he may be considering.

The points considered in this paper are only three in number, and are of an altogether practical nature. They have to do chiefly with what may be called the "mechanics" of a test. Many workers in the field look upon these matters as of little importance. There are other things, to be sure, about a test that a superintendent would do well to know before using it. But these three questions on the practical phases of testing should, the writer believes, be carefully considered first. Many tests will thus be rejected at once as impracticable, and final choice, on the basis of more fundamental criteria, will be made easier. The writer would urge, then, that in selecting tests for use in his schools the superintendent should determine the following facts concerning the tests under consideration: (1) How much will the materials cost? (2) Are the tests easily given? (3) Are the tests easily scored? These three questions will be taken up briefly in order. The intention will be, in each instance, to suggest ways in which a superintendent may determine, before actually using a given scale or test, certain practical merits or faults of the material.

1. *How much will the materials cost?*—This is the most elementary question of them all, and the one on which a hard-headed superintendent is least likely to make a mistake. But he occasionally does. The most important point to notice is just how much accessory material accompanies the test blank, and whether or not these accessory materials involve an extra charge. Tests differ a great deal in this respect. The writer has in mind a well-known test in a fundamental school subject in which the listed price of the blanks includes (*a*) the test folders on which the children work, (*b*) the score cards, (*c*) an adequate number of direction sheets, (*d*) a booklet of general directions—for tabulating, finding medians, etc., (*e*) a larger booklet containing instructions for comparing schools or classes, (*f*) a record sheet, and (*g*) a sheet for recording repeated use of the test. This makes up, in the aggregate, a confusing amount of material. But it is all covered in the initial cost of the blanks. In contrast with this is a certain group scale of intelligence in which the primary cost covers only

the booklets used by the pupils. But in order to use these blanks the superintendent must buy also (*a*) booklets of directions for the examiner (of about sixty pages) and (*b*) score cards with scoring directions. The result is that the total expense of the blanks for a class is a fourth more than would be expected from the cost of the blanks as quoted. This latter arrangement (extra charge for directions and materials for scoring and recording) is the more common method of price quotation at present.

The superintendent should also consider the expense of shipment. In some instances, the shipping expenses are prepaid; more often they are not. And since certain examinations require for each child a booklet which may contain as many as sixteen pages, with an examiner's booklet mounting up to fifty pages or more, besides scoring and tabulating materials, it is well to determine in advance what the cost of shipping may be. The writer has found that small orders—under two hundred—require postage or express amounting to more than 15 per cent of the cost of the materials ordered. For large orders, the cost of shipment usually runs to at least 10 per cent of the cost of the materials.

In case the tests are to be scored by a paid worker instead of by the teachers, the superintendent should add to the above-mentioned items the cost of scoring. There is only one way to determine the time and cost of scoring—have some of the blanks scored. It is possible to form only a very general judgment from mere inspection of a blank as to the length of time needed to score the blank. And any estimates sent out by the originators of the tests or by commercial houses handling them are almost sure to be considerably too low.[1]

2. *Are the tests easily given?*—When the "directions" for the use of a scale extend over a booklet of twenty to thirty pages, it is evident that the teacher must make a somewhat elaborate preparation if she is to handle the tests with any degree of accuracy. She will need to spend a half or three-quarters of an hour merely

[1] The writer confesses to being a guilty party in this connection. Each year he has students who make it their business to score blanks rapidly and efficiently. As a consequence, estimates based upon their performance suggest a burden of scoring considerably less than may turn out to be the case with less skilled labor.

to read over the directions; and really to absorb them so that the tests will function smoothly will take two or three hours more. Such close study will be required even if the procedure is fairly simple and straightforward. Procedure in many instances is astoundingly elaborate and intricate.

The writer has before him an examination for children in the first three grades. The directions to the children cover fourteen pages in the "Manual of Directions"; the general directions to the examiner and the directions for scoring cover twelve pages more. In order to give this examination these fourteen pages must be practically memorized; the manual advises that the directions should not be read, but should be given from notes made on a copy of the blank used by the children, after "careful study" of the printed directions. That the examiner must indeed have a mastery of the verbal directions may be realized when the number of other things this person must do is fully understood. Not only must he give the directions to the pupils. He must illustrate certain tests on the board, occasionally using red, green, and blue chalk. He must point out certain places in the test blank to the children, watching to "make sure that pupils on his extreme right and left, as well as those in the rear rows, see where he is pointing." He must show the pupils "how to lift the forearm only, leaving the elbow on the desk to avoid fatigue" in raising the pencil between tests, and should "see that all children have their pencils up." He must do this, in fact, forty times (something of a job, with a restless first-grade class!). He must also watch for a hand raised to indicate a broken pencil, and supply a new pencil at once. He must observe closely the progress of the class, on most tests, so as to stop work "when from half to three-quarters of the class have finished." Yet we are told that "the series can all be given by the classroom teacher."

The amount of time necessary to prepare to use some of these group scales is enormous, and the interest of teachers in such work is being put to an impossible strain. There is a strong probability of a definite reaction against the measurement movement as impracticable, if the belief becomes prevalent that such burdensome methods are essential. As a matter of fact, they are not

essential. Such intricate procedure is evidence of a lack of care on the part of the originator in arranging his tests so that they can be given readily, and of a lack of consideration for the teacher. A good test should practically give itself. It is common among psychologists to hear the stupidity of the teachers, and their total inability to give tests in standard form, much berated. In reality, the stupidity is on the other side. If it is intended that a test be given by the teachers, then the burden is upon the originator to fit the test for such giving. If the test cannot be given by the average teacher, the originator has failed to do his work as he should.

3. *Are the tests easily scored?*—However, after the test or scale has been given, the business is by no means over with; there is still the scoring. It is coming to be generally agreed that a good test should not require written answers; this elimination of written responses greatly simplifies the scoring problem. However, examples of burdensome scoring methods are still appearing.

Thus, the examination for the first grades already referred to requires in one place that the pupil draw a boy running. The scorer is told to score one point "for a man to consist of a trunk, two arms, two legs, and a head; one point more if he registers running." In another place one point is given for "a square around or near enough to the watch to show that the child identifies the article." For another item, the scorer is confronted with the following directions:

PROBLEM 13—TOTAL CREDIT 6

1 for 6 pennies marked, but not more than 6.
1 for 4 quarters marked (but not more than 4), with either a "2" or "5" or "25."
1 for writing correctly any number of pennies made of correct size, provided the number be not more than 6 or less than 2.
1 for writing correctly any number of quarters made of correct size, provided the number be 2, 3, or 4.
2 for indicating in any number language so that the examiner will know that the child has the idea, $1.06 (combined sum).

There is no excuse for tests requiring any such scoring directions. No teacher should be expected to score such tests.

Again, a test may be fairly easily scored and still involve a great deal of work before a final statement can be arrived at. Thus, in a recent examination there are fifteen tests. In four of these, the children are to answer by underlining a word; in two, they cross out a word; in nine, they write a number. This is not as systematic as it might be. But the real difficulties have not yet been reached. After one has counted the number of words correctly crossed out or underlined or the number of figures correctly written, the final score is still to be determined. In one test the score is "the number of exercises right minus the number wrong, and in case the difference is negative, call it zero." In another it is "the number of spaces correctly filled in, divided by four; if a pupil has all 150 spaces correctly filled in, he receives the highest possible score, which is 150 divided by 4, or $37\frac{1}{2}$." In three other tests, the correct score is, for the purpose of combining in the final rating, to be multiplied by 2. Again, a "rate" score is obtained by taking "the number that the pupil has marked as indicating the line he was reading when time was called and dividing this number by 4." The number of exercises done correctly makes up a "comprehension" score. However, on this test, the end is not yet. The scorer is told to "note that in the case of Examination II, 4 is to be added to the 'comprehension' score and 15 to the 'rate' score before the scores are transmuted into quotients." All the scores must now be transcribed from the fifteen inside pages, eight of which are upside down, to the front of the booklet, and then be added to give a "total point score."

However, this is not the final form of statement advised. The scorer now adds "43 to the point score and divides by 10; the quotient is the mental age." But a percentage statement is more desirable, so the scorer divides the result of this last operation by the child's chronological age—that is, this is done if the child is not over 14; if he is, the scorer "adds 43 to the pupil's point score and divides this by the average score for his chronological age, plus 43." But for ages above 18, the point score is the same as for 18.[1]

[1] It is only fair to say that tables are provided for facilitating some of these computations. The tables cut down the labor somewhat but hardly reduce the complexity of the situation.

All the calculations described in the last paragraph are for but one-half of the examination. The scorer now goes through much the same process for the other half and, by a comparison of the halves, obtains some idea of the relation of the child's achievement in school work to his ability to do such work. But the person who is scoring the examination, presumably the teacher, is not through with it all yet; the results must be recorded on the class-record sheet—which is no small task. And yet the deviser of this scale speaks of his method of handling data as unusually simple!

As has been said at the beginning of this paper, there is now a "boom" in tests, and this "boom" may be regarded as an exaggerated evidence of a growth that is fundamentally healthy. But there is a real danger in some of the elaborate examinations which have recently appeared. The measurements movement can survive only if it renders a real service to the schools. It is fast coming to be largely a burden. As a matter of fact, there is nothing mysterious about a test; nor is there any magic in statistics. There is no reason why teachers and superintendents should not feel themselves competent to pass on the materials and methods offered them. If the tests are not convenient, or the statistics are overinvolved, these materials may well be rejected. A test is fundamentally an attempt to get at facts in a more direct way than would be otherwise possible; and statistical procedure is but a method of making those facts more readily available. The needs and convenience of superintendents and teachers should receive more consideration by those engaged in constructing tests. It is high time that this should be recognized, and that practical requirements should be taken into account.

REAL PROJECTS AND OTHERS

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The third-grade room was astir this morning. Had not "teacher" told her class to bring all sorts of things from home with which to play store? Yes, they were really going to play store during the arithmetic period. Everyone felt sorry for poor Mary Jones, who could not come because her little sister had the measles.

The long, plain table near the big desk was piled high with ribbons, gloves, neckties, stockings, cheap jewelry, and picture-books. There was even a pair of perfectly new shoes that Andy Carroll had brought.

"Teacher" had some boxes of paper money, and everyone was to have a chance to make a purchase. Of course, the things were not to be bought "for keeps," but that would not spoil the fun.

Who should be "clerk" and sell these treasures to the waiting customers? "Teacher" alone knew, and she did not deign to tell till class time came.

"Who wishes to be clerk?" she asked.

There was such a show of hands that it was obvious that a clerk could not be selected just by calling for volunteers.

"We'll have Michael Regan for our clerk," she said. "Michael had such a good lesson yesterday. Be careful to make change correctly, Michael, or your customers will complain."

Nobody told these children that they were learning arithmetic by the project method. The teacher herself did not know it, for all this happened several years ago, before the word project was bandied about so freely in educational circles.

Four or five miles away, a little rural school was making unusual plans for spring. The five older boys were laying out garden plots on paper in the intervals between geography and history. The arithmetic books lay in the desks, unused and dusty, but their owners were learning to "figure" with an accuracy they had

never known before. They were estimating the dimensions of beds and garden plots, and their brains were busy with computations and costs connected with the "projected" planting. The English class was writing business letters to seed firms, and inclosing real stamps and money orders.

Nobody told these boys that they were learning drawing and arithmetic and English, to say nothing of agriculture, by the project method. Nor did they so label their summer's experience, when, in the autumn, they compared accounts and balanced the books that showed their outgo, their income, and their net profits.

A city high school in the same state is conducting a real school newspaper which appears regularly each fortnight. Its news items are the work of eager students, its comments and editorials the product of student brains. Students manage the finances and solicit the advertising. The paper serves a real purpose in disseminating news and in the promotion of harmony and oneness in the school.

The students know the paper as the *Mercury*. I am sure that these members of the journalism classes in the High School of Commerce of Worcester, Massachusetts, do not realize that they are helping to carry on a project in the truest sense of the word.

Recently, however, schoolroom practices of a quite different nature have come to be labeled projects without a true conception of the real significance of the word.

A long sand-table in a fifth-grade room is now the center of attraction. A winding river with yellow sand banks runs the entire length of the table. To be sure, the river is made of narrow strips of glass, but it looks quite realistic.

Real rubber-tree twigs, leaves, moss, and grass make a wilderness lining both banks of the miniature Amazon. Little models of boats laden with crude rubber float down the glassy river. Tiny clay men gather the sap in the forest, prepare it crudely over mock fires, or carry it to the river boats. There are native huts thatched with grass.

Samples of rubber in different stages of its manufacture occupy most of the space on the bulletin board. Essays on different phases of the subject are in preparation during the English hour.

"Our project this term is the 'Rubber Industry of the Amazon Forests,'" you are told. Children talk glibly about their "rubber project," and the word project is generally in the air.

But is it a project? Good teaching it is, surely, but what relation has it to real life? It makes geography alive, vivid, interesting, to these intermediate-grade children. In short, it is a good example of the successful use of the "play way," but it touches life itself too little to be called a project.

A Freshman English division is enthusiastic over *Julius Caesar*. Many of the shorter scenes have been dramatized by the class. Longer scenes have been read with improvised action to suit the words. The appearance of the different characters, their costumes, the stage settings—all these have been discussed

"I am teaching *Julius Caesar* by the project method," airily announces the instructor in charge.

But is it a project? Dramatization it is, surely, and its result is increased interest and an awakened love for Shakespeare's plays. These children beg to be allowed to read another play before the end of the year. Surely, dramatization has its place in the schoolroom, but why not call it dramatization, which it is, instead of project which it is not?

A series of living pictures helps to sharpen the memories of these same Freshmen during their study of mythology. The teacher may call these pretty and useful devices a new set of projects. Are they more valuable because she does not call them tableaux?

When the word project, as applied to educational procedure, first came into vogue, its meaning was clear-cut and well defined. It implied the transfer of a situation of real life to the schoolroom with the intention of vitalizing and adding to the interest of the ordinary work, and with a forward look toward preparing pupils for situations which they might encounter later in real life.

Thus defined, the project marked a progressive step in education. It seemed to look ever toward new contacts between schoolroom life and real life.

The term has, however, come to be applied so loosely that its meaning is growing muddled. More and more frequently it is

applied indiscriminately to all schoolroom "stunts," to all devices out of the ordinary, to dramatization, to the play way, even to problems and exercises. It is suffering the usual fate of the educational slogan, and is becoming a mere catchword of unthinking pedagogues. We hear it used to justify any radical departure from traditional routine, whether such departure has a justifiable end in view or is a mere whim of the instructor.

Therein lies a danger. Every new educational slogan has at heart a real idea, born of the experience and the experiments of some progressive teacher, or of some group of progressive teachers. It gains a hearing, acquires a vogue, unfortunately, and soon becomes a byword, perhaps losing its power to help education in its slow evolution.

"Every lesson an English lesson" degenerated into an orgy of uncorrected, inexact, slovenly work. "The socialized recitation," a splendid method when controlled judiciously, threatens to meet the same fate since it is used so often to justify disorder and lack of control.

May I suggest that, weeding out some of the multiplicity of definitions of the word project just now in vogue, we might profit by a return to the truer idea of a project as a situation from real life transferred to the schoolroom to vitalize the routine and to help it make new contacts with the larger world of adult life?

EYESIGHT AND PAPER GLARE

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United States Bureau of Education

The attention of teachers has in recent years been directed vigorously to the hygienic problems of the schoolroom. We know something about the necessity of providing adequate ventilation. We have standard measures of the amount of window space that must be provided per unit of floor space. We have had studies of temperature and of proper adjustments of furniture. Special studies have also been made of such problems as the periods of various kinds of work which are possible without undue fatigue. These studies have been carried in the field of reading to the point of determining the size of type which will save the pupil from eye fatigue or undue strain. The following material collected from a number of sources is intended to keep before the minds of teachers and school officers the general principle that all of the equipment of the classroom affects the hygienic conditions under which pupils study. The teacher is likely to think of the style of paper used in a textbook as a matter of very minor importance. The following statements will help to correct this view.

In the *Electrical World* of March 21, 1914, Professor L. R. Ingersoll has an illustrated article, "A Means to Measure the Glaze of Paper." The instrument by which measurements are made is called the glarimeter, designed and constructed at the Forest Products Laboratory, United States Department of Agriculture at Madison, Wisconsin. Glare from paper, that is, the brilliant reflected light which induces contraction of the pupil, causes a loss of visual acuity and the resultant eyestrain. The glarimeter measures the glare; the percentage of glare determines the fitness or unfitness of paper for use in books.

A paper which shows a 50 per cent glaze reading will give less glare than one of 60 per cent and, other things being equal, will be easier on the eye than the latter. The instrument will permit the printer to order a book paper

of less than, say, 40 per cent glare and will enable the paper-maker to meet this requirement with certainty.

A table of measurements gives percentages of glare varying from 15.1 for certain papers to 90.5 for others. The tests with unsized newspaper, uncalendered, showed 27.7 per cent glare. This same unsized newspaper, passed through the calendering rolls, gave glare percentages that increased from 33.3 for one passing to 64.8 for twenty-nine times passing or twenty-nine pinches.

Black and colored papers give higher glare readings than do white papers of same finish. Brown solio paper gives 99.2 per cent glare.

Dr. Ludwig Kotelmann has stated that, aside from seating and lighting questions in schoolrooms, "the first question to be considered in connection with the subject [of myopia in school children] is that of the preparation of hygienic schoolbooks. The paper used in them should be of a uniform yellowish white, since pure white is apt to prove dazzling, and must not be very glossy. It should contain as little wood pulp as possible and have an adequate thickness."

In *Hygiène oculaire des écoles*, Truc says:

Papers very white, bluish, gray, or glazed should be rejected, because of reflections or insufficient legibility.

The Committee on Children's Welfare of the Association of Women Principals of Public Schools, New York City, held in 1908 a conference with an advisory board of oculists for the purpose of considering "The Remediable Causes of Eyestrain in Present Conditions," This conference unanimously adopted the suggestion "that hereafter no calendered or coated paper be permitted in the textbooks given to the children, as the dazzle of such paper is injurious to their eyes." In presenting this report to the Board of Education, the Committee on the Course of Study stated that "only 5 per cent of all cases of myopia are believed to be due to unpreventable and uncontrollable causes, and a great majority of cases of myopia are more or less directly traceable to eye strain in school. . . . . The second assignable cause for the development of myopia is the kind of paper used in school books." Further, "it remains to be settled to what extent, if to any, machine-finished

paper is harmful. . . . . This latter question cannot be settled by educators, publishers, or printers, but should be determined by oculists. The latter, however, have never made an extended investigation of the subject, and hence can give only expert opinion which is not based on evidence. An investigation should determine the exact extent to which coated paper is used, the effects of such paper on the eyes of the pupils, the amount of time spent by pupils working continuously at books made of such paper, and how often a day they do so."

In the American School Hygiene Association's *Report on the Standardization of School Books*, 1911, all that the committee says on the subject of the paper of textbooks is, "The paper should be unglazed, free from shine and opaque," that textbooks "should be printed on a good quality of the modern light paper," that "at the present time there is no satisfactory consensus in regard to the question whether the paper of schoolbooks should be smooth or somewhat rough," and makes the suggestion that tests should be made to see whether "a certain degree of roughness will reduce the glare which to some extent is inevitable with clear white paper." As to whether schoolbook paper should be white or slightly tinted, the report states that "experimental evidence seems to indicate that black on white is more legible than on tinted paper, while clinical experience seems to point to the advantage of a slight tint."

In an address before this same Association in 1912, Van Rensselaer Lansingh, president of the Illuminating Engineering Society, stated as an axiom:

> All material used in classroom exercises, such as books, colored drawings, etc., should be printed on unglazed stock, i.e., the paper should have a mat surface which gives good diffuse reflection.

Barbara E. Roethlein, of Clark University, in her paper on *The Relative Legibility of Different Faces of Printing Types*, 1912, says:

> The quality and the texture of the paper is a much less significant factor than has been supposed, provided, of course, that the illumination and the inclination of the paper are such as to secure an optimal condition of light reflection from its surface.

The conclusion of the Oculist Subcommittee of the British Association for the Advancement of Science, in their recent report, is that some of the serious visual defect among school children is due to the books they use. Among specific recommendations are paper, unglazed but hard, smooth, and opaque, preferably white or cream-colored, uncalendered; "the most vital of all considerations with regard to paper is that it should be non-shiny."

SELECTED BIBLIOGRAPHY ON GLARE FROM PAPER

British Association for the Advancement of Science. Committee on School Books and Eyesight. *School World* (London), XVII (October, 1915), 369–70. Report presented at the Birmingham meeting, 1913. Investigations have been made in order to obtain an objective measurement of the gloss of paper, A. P. Trotter, of the committee, having designed a new form of gloss tester for use in carrying out tests with books and writing papers used in schools.

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Luckiesh, Marion. "An Analysis of Glare from Paper." *Electrical Review and Western Electrician*, June 1, 1912. Figures. Also in *Scientific American Supplement*, LXXVI (September 13, 1913), 170. A study with measurements of "the distribution of brightness across the 'glare spot' on the paper."

Luckiesh, Marion. "Glare from Paper." In *Transactions of the Fourth International Congress on School Hygiene, 1913*, V, 365–68. Author states there has been as yet no concerted movement inaugurated for the elimination of glossy paper from general use; the greatest progress toward its elimination "will arise from a concerted demand for the use of non-glare paper."

Educational Writings

REVIEWS AND BOOK NOTES

Industrial education in a democracy.—During a period of social and industrial dissension it is natural that men should blame the country's educational system for the conditions, and in the same breath call upon that system for a constructive program looking toward social and industrial conciliation. The conflict in which we find ourselves at present is a challenge to the educational forces of the nation. A timely contribution[1] to a constructive program has been made by Roy Willmarth Kelly, sometime director of the Harvard University Bureau of Vocational Guidance, and now manager of industrial relations of the Associated Oil Company of California.

While the book is addressed primarily to industrial managers, it has much of value for the educator who is interested in the general field of vocational education and guidance. Mr. Kelly indicates the aim of his volume in the Preface as follows:

> Of the more than eight million persons engaged in industrial pursuits in the United States, not one-third have had a grammar-school education. Those who have had any effective vocational training represent a much smaller proportion of the total. Although it is difficult to estimate the exact amount of the economic and social losses resulting from the lack of education or faulty education, it is quite certain that the aggregate is extremely large. The purpose of this volume is to indicate what some of these losses are, to point out the more important difficulties to be overcome in preventing them, and to suggest a practical program for future action [p. ix].

The school administrator will develop particular interest in chapter iii which reviews the history of "The Earlier Forms of Apprenticeship," and in chapter ix, which summarizes present tendencies to formulate "The New Apprenticeship." These chapters will be of like value to those in charge of educational and apprenticeship activities in industrial establishments. New plans and policies are compressed into twenty pages of reading matter.

One of the most suggestive chapters in the book deals with the "Relation of the Employment Manager to Industrial Training." The author believes that an employment manager with proper training and spirit can contribute effectively to the progress of society. He says:

> It is only rarely that a concern without centralized control of employment is able to co-operate effectively with vocational guidance agencies or with other organ-

[1] ROY WILLMARTH KELLY, *Training Industrial Workers.* New York: Ronald Press Co., 1920. Pp. xxi+437. $5.00.

ized efforts to improve social conditions in the community. . . . . The application of scientific principles and methods will do much to hasten the solution of such problems as those of fatigue, the use of non-financial incentives, increased enjoyment of work, the selection, training, and advancement of employees, the adjustment of machines and methods to suit the psychology of the worker [p. 124–25].

He adds that "substantial advancement is now being achieved and can be hoped for in much larger degree through the efforts of trained men and women who approach these questions from the practical, scientific point of view of staff specialists." The employment manager of the new industry is in many ways a "human engineer."

The last two chapters, "A New Emphasis in Education" and "Fixing Responsibility for the New Program," set forth most pointedly Mr. Kelly's ideas of the reconstruction that must accompany a change for the better in industry and likewise in society. He stands squarely upon the conviction that "it is no less important that the thousands of employees in the ranks of industry should be taught something of the simple elements of economics, the historic origin of present conditions, the principles of scientific method and the fundamentals of good government, than that university students should do research work in libraries and laboratories" (p. 321). This lack of knowledge on the part of the workers is at the root of much of the "obstruction tactics" indulged in by both labor leaders and industrial executives. Therefore, there must be a new emphasis in education. "It must further the advancement of every class and it must utilize all resources in discovering promoting men and women who make the less spectacular but vitally essary minor contributions to progress" (p. 329). The responsibility for ıe new program lies with the state, but the expense in certain cases should be borne in part by the individuals served and in part by the industry which is to profit by such training.

Mr. Kelly's book is a noteworthy contribution to a constructive educational program designed to harmonize the conflicting social and industrial tendencies of the day. Its scope is broad. There are numerous sections devoted to the more technical details of administering industrial training within factory walls. All of it is valuable for the industrial educator or manager but of less importance to the public-school official. A series of well-arranged appendixes presents a mass of information relative to the educational schemes of a number of corporations, as well as condensed information concerning the several educational surveys that have been made during the past few years. The general usefulness of the book is enhanced by the care that has been devoted to its mechanical arrangement, to the compiling of a good index, and to the elaboration of an extensive bibliography.

Suggested reconstructions in home economics.—For some time it has been apparent to students of curriculum-making that we are drifting, with little agreement either as to the objectives of education or as to the means to be

used to reach these objectives. This is true, not only of the broader objectives that should make possible the selection of school subjects and the proper relating of one to the other, but also of the items within a given subject. In an instructive monograph[1] the Home Economics Department of the University of Chicago and Professor Rugg show that home economics is no exception to this general rule, and develop a constructive program which is full of suggestions not only to the teachers of that subject but to teachers of other subjects as well.

Numerous possible sources of information were examined carefully. The conclusions reached in the monograph are based chiefly on the intensive study of courses of study, question blanks, textbooks in home economics, the *Journal of Home Economics*, the *Annual Proceedings of the Lake Placid Conference*, representative textbooks on education, pamphlets of the Bureau of Education, issues of the *Teachers College Record*, and four surveys which have dealt particularly with home economics.

As a result of the authors' analysis of this material we are shown the status of the teaching of home economics with regard to aims, objectives, selection of subject-matter, grading of subject-matter, methods of teaching, and tests. The criticism of these headings is sound and is followed by a constructive program which emphasizes particularly the making of the course of study, the gradation of subject-matter, and adequate tests. The sections which deal with the course of study and with tests are of special interest.

In the authors' analysis both of the aims of teaching home economics and of the actual courses themselves attention is called to the fact that there is a lack of clear teaching goals. An analysis of the aims shows the usual attention to broad and intangible aims and the usual undesirable tendency to state aims in psychological terms rather than in terms of life-situations which the pupil is to be trained to meet, or in terms of the essential activities which the pupil should be trained to perform efficiently. Such aims as "culture," "independence," "intellectual power," "self-reliance," "broad view of life," and "high sense of honesty," are certainly not peculiar to home economics. They will be obtained, if at all, as a by-product of an attack on those objectives which distinguish home economics from other subjects. These general aims are particularly objectionable, not only because they prevent clear thinking, but because they afford a sort of protective coloring which shields loose and inefficient practice.

The monograph places great emphasis upon the need of setting up aims, objectives, and outcomes in terms of critical judgments and appreciation as compared with the present tendency to overemphasize mere skill and infor-

[1] *Home Economics in American Schools.* "Supplementary Educational Monographs," Vol. II, No. 6. Chicago: Department of Education, University of Chicago, 1920. Pp. xii+122. $1.25.

mation. The reviewer would agree that too much emphasis has been placed upon the routine and mechanical aspects of instruction and that an increased emphasis should be placed upon thinking and appreciation. These last abilities, however, are co-ordinate with those described under the terms "skill" and "information," rather than exclusive of them.

The authors point out, and the reviewer would emphasize the fact, that skill and information are needed as well as ability to think and to appreciate. It might be well to add that, in spite of the impression given by some of our modern educational writers, skill and information are no less pedagogically respectable than thinking and appreciation. What is needed is less emphasis upon the mere mechanical phase of instruction and more attention to the avoidance of mere mechanical rule-of-thumb procedures. The commendable desire to increase the emphasis upon problem-solving and appreciation no doubt accounts for the analysis and criticism of the course of study on the basis of the four classes of abilities—skill, information, critical judgments, and appreciation. While useful for the authors' purposes, it appears to the reviewer that there is great difficulty in attempting to hold in mind the point of view of social utility while at the same time setting up a classification of values on a psychological basis. If, in mapping out the course of study in home economics, the objectives were thought of in terms of social situations, we should have such a classification as: buying food, preparing food, the sanitary and economical heating of the home, decoration of the home, selection and building of the house, the family budget, entertainment in the home, etc. Under each of these items one should inquire the skills, informations, judgments, and tastes which are necessary. In this manner the relative value of these various classes of abilities would be made clear. In no other way can a proper perspective be kept among them. Even this procedure would need to be guided by the caution, urged so effectively in this monograph, not to let the more mechanical and obvious items of skill and information displace the larger and more subtle items of critical judgment and appreciation.

In their program for the scientific study of home economics the authors recognize the value of this criterion of social utility (see especially page 118). This point of view is also suggested in criticizing the omission, in present-day textbooks and in present-day courses of study, of important objectives such as marketing, the budget, etc.

The chapter on tests should be particularly helpful to teachers of home economics, not only in showing the importance of setting up minimum essentials, but also in laying down the broad outlines which should guide anyone who attempts to make tests in this subject. The samples of preliminary tests to measure skill, information, judgment, and appreciation are especially stimulating.

The value of this monograph should be apparent to all. Neither the quantity nor the quality of work done in its preparation can be appreciated

except by those who have done small tasks of a smiliar character. An enormous amount of material was studied in the analysis of the various sources of information. This material was organized and interpreted with rare skill. The monograph is, therefore, a substantial contribution, not only to the teaching of home economics, but to the technique of making a course of study in other subjects.

ERNEST HORN

STATE UNIVERSITY OF IOWA

Methods of teaching history.—One is impressed with the serious and thorough treatment of the field which Dr. Tryon has outlined in his recent book[1] on the teaching of history. In twelve chapters, totaling 284 pages, he has considered a wide range of topics, dealt with them in a virile manner, and leaves one in no doubt as to what he thinks should be done and can be done. He is free from dogmatism and presents fairly both sides of all important disputed questions. Any beginning teacher of history will find much in this book, not only to enable him to start his work effectively, but to keep him healthily stimulated all along the way.

While the reviewer would have been glad to find in this volume a chapter devoted to the purposes of history instruction and also one on the geographical aspects of the teaching of history, comparable to the chapters on other subjects, and looking particularly to a more simplified, definite, and more satisfactory future application in the case of the average student, yet he agrees with the author's contention in the Preface "that there is a technic of teaching history in the junior and senior high schools that can be mastered by a teacher and actually applied in the daily classroom activities, regardless of the content of the course." That this technique gives one much food for thought this book amply shows.

The conviction of experienced teachers of history that history teaching is an exacting, many-sided task is fully confirmed in Dr. Tryon's treatise. The thirty pages devoted to "The History Recitation" in the initial chapter make an energetic attack upon the great problem of guiding student activities during the class period. Stimulating directions, specially significant for the young teacher, are given by the elucidation of such topics as "conditions necessary for a good recitation in history," "controlling aims," "forms and types of recitation," "directions for observing," and "standards of judging," the last named, with its illustrative score card, being specially important for prospective teachers in training.

Of no less interest and equally fundamental is the chapter on "Teaching Pupils to Study," which serves the double purpose of showing how meager has been, thus far, the development of this idea and of giving practical and detailed directions for students' self-help, notably in the direction of the much

[1] ROLLA MILTON TRYON, *The Teaching of History in Junior and Senior High Schools*. Boston: Ginn & Co., 1921. Pp. v+294. $1.48.

discussed question of supervised study, in both its psychological and personal aspects.

In the following forty pages there is a discussion of five methods of conducting recitations: lecture, textbook, topical, source, and problem. The conclusion in regard to the lecture method seems to be, that, if regarded as a device rather than a method, "it becomes an effective tool for occasional use and for a specific purpose." Much more space is devoted to the use of the textbook, the most useful suggestion being the plan for gradation in modes of procedure in the use of the textbook in high-school history teaching, from grades seven through twelve, and the necessity for close word study and much drill.

As might be expected, less attention is given to the topical and source methods than to the as yet undeveloped problem method. As the author sees it, the problem method "consists in leading the student to see the problems which confronted people in the past and to solve them as they were solved by the people in the past." Most of the space allotted to this method is used in the elaboration of an example of the problem-solving method in the field of American history.

A strong case is made for written work, chiefly outside of class periods, under the captions "Written Work in High School History" and "The Theme Paper and Notebook," the former being well illustrated and the latter thoroughly outlined and discussed. The question of outside work is further elucidated in "Library and Collateral-Reading Problems," where the purposes, guiding principles, and means of testing this activity are set forth.

Assuming that the teaching of current events in connection with high-school history has come to stay, Dr. Tryon points out many fields for experimentation and discusses very much to the point the varied aspects of the many-sided topic.

In the chapter on "Planning the Course and the Lesson," the author, after frankly recognizing the fact that the objectives for history study have not been scientifically determined, attempts, under this handicap which devitalizes his work to a degree, the problem of getting the maximum of results from history instruction. Among other things he gives a time-saving and otherwise valuable tabular view of fifteen textbooks in American history for the senior high school, and a "Cross Section View of Colonial Life about 1763," with plentiful references and significant comments.

Those interested in the measuring of results of history teaching will find in the chapter on this subject a good description of the few tests that have been inaugurated. The accompanying discussion suggests the wonderful vitalization that is bound to come to history teaching from this study if conducted honestly, effectively, and in an unconventional manner. That it will result in an entirely new revaluation is foreshadowed in the most forward-looking statements of the chapter:

In reality the first step in the construction of adequate and comprehensive tests in history has never been taken by any of the investigators to date. This step is

scientifically to determine the particularized objectives of history teaching in each unit of instruction in the subject [p. 172].

The closing chapter on the "High School History Teacher," with its valuable statistical summaries concerning causes of failure among teachers, pupils' estimates of teachers, and the qualities which make an effective teacher, history teachers' equipment, etc., exhibits the same qualities of definiteness, completeness, and discrimination in selection of illustrative and biographical material that make the book as a whole well worth the careful attention of every teacher of history.

GEORGE H. GASTON

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An analysis of the reading process.—It is undoubtedly true that no phase of school learning has beeen so thoroughly and successfully analyzed by the experimental method as reading. Furthermore, the results of this analysis have been so significant and so fruitful in their applications that they furnish the best basis of optimism for the future of a science of education built upon the results of experimental methods. It is also true that the series of monographs, of which the volume[1] under review is one, constitutes the most complete and valuable single source of material on this subject that we have. This monograph, showing the relation of the eye to the voice in reading, together with its important contribution to the study of meaning, gives the series a degree of completeness which makes it invaluable to all students of education.

By an ingenious method of correlating a phonographic record of the voice with the photographic record of eye-movements in oral reading Buswell has secured definite quantitative results concerning the eye-voice span of fifty-four subjects, ranging from pupils of the second grade to college students. Some of these results are as follows:

1. The average eye-voice span is greater for good readers than for poor readers. Measured in letter spaces this span is 13.8 for the good readers and 8.7 for the poor readers of the elementary grades.

2. There is a general, though irregular, development of eye-voice span throughout the grades from the second to the seventh. High-school pupils exceed the pupils of the seventh grade in eye-voice span and college students exceed high-school pupils.

3. Variations in the span are more dependent on position in the sentence than on position in the line.

4. The span of good readers is wider at the beginning of the sentence, a little narrower within the sentence, and much narrower at the end of the sentence.

[1] GUY THOMAS BUSWELL, *An Experimental Study of the Eye-Voice Span in Reading.* "Supplementary Educational Monographs," No. 17. Chicago: Department of Education, University of Chicago, 1920. Pp. 104. $1.00.

5. In general, the good reader varies his eye-voice span much more than does the poor reader. We may conclude that the good reader shows more regard for thought units.

6. A relatively wide eye-voice span is characteristic of rapid readers of all grades of development.

7. A negative correlation exists between eye-voice span and the number of fixations per line.

8. Regressive movements of the eyes are of two types—one characteristic of poor reading, the other of good reading. The latter occur when the forward sweep of the eye is too long. They are correlated with wider eye-voice spans.

9. Unusually long fixations are due to difficulties in the reading material rather than to eye-voice relationships.

In addition to his study of the more mechanical aspects of eye and voice relationships Buswell made a very interesting investigation of the way in which these factors are related to the recognition of meaning. For this purpose he used as reading material a paragraph containing a number of words which might be pronounced in either of two ways. The records show that the introduction of these difficult words causes in general an increase in the number and irregularity of eye-fixations and shortening of the eye-voice span in the case of oral reading. The greater the eye-voice span the less difficult is the reading, since the "subject with a wide span has an opportunity to interpret the meaning in larger units and is able to get the correct meaning before the voice reaches the point of difficulty" (p. 95).

Buswell believes that the recognition of the meaning of individual words is attached more closely to the visual perception in the degree to which the reader is more skilled in reading. When difficulties arise in silent reading the reader falls back on the more primitive habits of reading and pronounces the words to make the meaning clear. The development of reading may be traced through three stages.

> First, the most primitive or immature stage of oral reading where the eye, the voice, and the meaning are all focused at the same point. Secondly, the more mature stage of oral reading where there is a considerable span between the eye and the voice, with the recognition of meaning occurring at a point nearer to the position of the eye. Thirdly, the stage of silent reading where the reader is entirely relieved of any attention to the voice and where the entire attention can be given to the eye and the meaning, making possible the development of a much higher degree of proficiency [p. 103].

E. H. CAMERON

UNIVERSITY OF ILLINOIS

The teaching of high-school subjects.—The literature of general methodology has for the most part concerned itself chiefly with teaching in elementary schools. Up to the present only two conspicuous books have appeared which deal entirely with general methods of teaching high-school subjects. The

success of these books has furnished evidence of the need for such material. Another book[1] has now appeared which is devoted to general principles of method in the high-school field.

The major part of the book is given to a discussion of the aims of teaching, the fundamental factors of method, and the principal modes of instruction. The scope of these chapters is well set forth in the following quotation:

> School education should secure for the student five qualities: knowledge of self, of environment, and of their mutual relation; power of thought; sympathetic feeling toward environment; power to express and apply; steadiness of character and permanence of attainments. Instruction which is adapted to the realization of this fivefold aim may be thought of as consisting of six elements or method factors: acquisition, as the securing of information; reflection, as its interpretation; expression, as the giving out of received experiences; appreciation, as the feeling response to situations; drill, as the rendering permanent of experiences; and testing, as the insuring of results sought. . . . .
>
> In the realization of the lesson aim, instruction may be viewed under five modes, which are variously combined in the method of instruction for different lessons: viz., Recitation, Problematic, Appreciation, Expression-Application, and Laboratory [pp. 41–42].

In addition to this general body of material the author discusses methods of study, lesson organization and planning, the application of educational measurements, and problems of individual and social instruction.

As the title indicates, the fundamental purpose of the book is to formulate the general *principles* upon which methods of teaching must be based. In a large measure the author leaves to the teacher the problem of adapting and applying these principles to instruction in the various secondary-school subjects. In this respect, as well as in the general body of principles covered, the book resembles the older group of general methods texts more than the books devoted particularly to teaching in high schools. The greater part of the book would be fully as applicable to elementary as to secondary instruction. The point of view is functional in that throughout there is a procedure from discovery of aim to the adaptation of process to aim. The reader has a feeling that the literature of experimental psychology and education might have been profitably used in greater amount in support of the principles stated.

The book contains little that is new, but as a statement and discussion of fundamental principles of teaching, it is a meritorious piece of work. Its value as a text would be contingent upon the use of sufficient supplementary reading and discussion to insure the application of its principles to the work of the classroom.

Mental development of the child.—It is now a full half-century since the child-study movement began. This movement has done much in the way of

[1] HERBERT H. FOSTER, *Principles of Teaching in Secondary Education*. New York: Charles Scribner's Sons, 1921. Pp. xviii+367.

yielding an insight into the nature of the physical and mental development of children, but thus far, at least, it has influenced but little the major problems of education. Animal and comparative psychology have linked themselves with it and, together with physiology, have given us the present-day biological psychology. As an introduction to an understanding of the developmental periods of man it has proved of great worth.

One of the most vigorous exponents of the new dispensation has been Professor O'Shea, whose recent volume[1] enables him with renewed confidence to put forth the views he holds concerning it.

His point of view is best expressed in the following quotation from the Preface:

> It may be said that one who regards human nature from the standpoint of biological psychology seeks to explain the behavior of a child or youth on the basis of natural laws governing the development of his body, his intellect and character.

There are three parts to the book: The first deals primarily with the instincts, the order of their development, their manifestation, their influence, together with the manner in which they may be utilized as an explanation of behavior. Although one meets with no new concepts here, one finds the results of extensive researches on the part of the author.

Part II, under the introductory caption of "Educational Interpretations," seeks to bring the facts previously established into definite relation to the problems of the school and the home, in so far as educational activities are concerned. He pleads for rational sense-training, learning by doing, and for the inclusion in the school of actual life-activities. Much stress is laid upon the power of suggestion. Two lengthy chapters are devoted to overstrain in education. Here the discussion centers chiefly about the conditions resulting in wastage of nerve energy, in the development of bad physical habits of posture, eating, sleeping, etc. The effects of faulty external conditions such as ventilation, heating, and lighting are dealt with briefly.

Part III, of over one hundred pages, is made up of quotations and questions, and the statement of problems which may serve as the basis for discussion and investigation. It is designed, quite evidently, for the use of reading circles and teachers' clubs and as a means of enabling students to bring to play upon the problems the principles developed in the other two parts of the book.

The book presents a phase of educational thought which is forcing itself more and more into evidence. Indeed, most of the facts with which it deals are recognized as of great significance. But one constantly asks himself how the school must be reorganized in order that these ideals may be realized. How must the curriculum be modified? How is the administration to be changed? What methods shall we use in order that more effective outcomes

[1] M. V. O'Shea, *Mental Development and Education*. New York: Macmillan Co., 1921. Pp. v+403.

may result? Professor O'Shea has not told us these things. But the book will serve the useful purpose of setting up the problems, and the future shall have the task of slowly working them out.

A valuable study in historical research.—Dr. Miller's historical volume appears as one of the series of "Supplementary Educational Monographs" published by the University of Chicago. This investigation of educational legislation[1] in Ohio from 1803 to 1850 represents a new method of producing a history of education.

The investigation seeks to discover a true expression of the "constructive educational thought and activity of the period" through an analysis of the legislative annals of the period.

This historical volume has several things to commend it. In the first place, it presents the struggles of the first state of the Northwest Territory to evolve a state system of education. The fact that Ohio's experience would probably affect the evolution of educational opportunity in the other states to be formed out of the old territory adds special interest to the volume.

In the second place, the volume is of special interest to the scientific student of education because of the method employed. The attempt to construct a history of education through a study of educational legislation is a novel departure in the procedure employed in writing educational history.

A third valuable feature of the volume is the appendixes. Appendix A gives "A Classification and Abstract of the Educational Legislation of the Period: 1803–50." Appendix B is "A Page and Volume Index to All Educational Legislation in the Session Laws of Ohio from 1803–50."

Some notion of the character of the volume can be gathered from the headings of the various chapters: "The Sources of Ohio's Public School System," "The Development of the Public School System," "The Public School Lands," "Secondary and Higher Education," "The Education of Defectives, Dependents, and Delinquents," "The Training of Teachers," "Supplementary Educational Agencies," and "Conclusions."

WALTER S. GUILER

MIAMI UNIVERSITY

A book on the fundamentals of bringing up children.—Definite laws have been found to govern the production of life in all its forms, from the lowest plant and animal organism on up the scale to human beings. Agriculturists place better seeds in better soil in order to reap better crops. Likewise, society is interested in better homes and better parents because every child has the right to be well born. This growing interest in child welfare is evidenced

[1] EDWARD ALANSON MILLER, *The History of Educational Legislation in Ohio from 1803 to 1850.* "Supplementary Educational Monographs," Vol. III, No. 2. Chicago: Department of Education, University of Chicago, 1920. Pp. xi+248. $2.00.

by the numerous baby shows and contests which are being conducted periodically in many parts of the country. Such movements are always accelerated by the publication of material which serves to lay down the guiding principles on which their progress is based.

The problem of developing character in childhood has ever been one on which there are many opinions as to the best methodology to pursue. However, scientific data collected from many sources are beginning to upset many of the traditions and formulate new points of departure. The effect of this new approach to the problem is reflected in a book[1] recently received. The point of view presented by the author is quite modern in many respects and represents much of the natural, common-sense approach to the hereditary and hygienic problems connected with parenthood. The book does not attempt to lay down in detail a program to which the parent should strictly adhere but rather sets forth those guiding principles of action which many parents need to understand thoroughly.

The volume is divided into seven parts dealing with the following topics in the order named: "The Physical Basis of Character," "Early Habit Forming," "Growth through Play," "Growth through Study," "Growth through Work," "The Child and His Vocation," and "The Religious Education of the Child." Each of these topics is developed in turn through short discussions in chapter form, many of which are omnibus in nature. The discussion of the place of the school in the training of the child takes a distinctly vocational bend and emphasizes preparation for life. Under the head of vocational guidance the author states that "every parent and teacher should observe and study the children entrusted to his care. He should familiarize himself with the general principles of physiognomy, should understand how to read the outward signs—in face, physique, hands and general texture and form—of the personality beneath" (p. 228). Such advice hardly conforms to the best of scientific principles in vocational guidance. The language in which the book is written is very direct and understandable. The illustrations are well selected and should add weight to the book's ability to make its material clear to the reader.

School supervision.—In the whole range of problems which the modern school system presents, none is of greater significance than that of supervision. It is admitted that for greatest general efficiency it must be had; there can be no unity or continuity of effort and purpose without it. But the manner in which it shall be carried on, the amount of time which it should consume, the apportionment among subjects and grades, the development of a proper attitude toward it on the part of the teaching staff, and the production of an efficient supervisory group—all these elements and more loom as unsettled problems.

[1] MARY S. HAVILAND, *Character Training in Childhood*. Boston: Small, Maynard & Co., 1921. Pp. 296.

Superintendent Wagner has brought together in a very readable volume[1] the accumulated results and conclusions of years of experience in the exercise of supervisory functions. His treatment of some of these problems is both interesting and practical.

As the basis of supervision he holds that "the advancement of the pupil is the simple end aimed at by teacher and supervisor" (p. 8). In order that desirable sequence, completeness of instruction, and unity of purpose may prevail, supervision must pass out of the realm of personalities and opinions "into the higher region of detachment and impersonality, and [be] maintained on the level of purely professional work, conducted in the atmosphere of judicial procedure" (p. 18). The three marks of adequate supervision are "commendation of the good, condemnation of the unsatisfactory, suggestion of the better" (p. 39).

Around these main precepts he weaves his arguments for a more sensible use and understanding of the supervisory capacities. Especially significant are his chapters dealing with the problem of developing the right attitude toward supervision on the part of teachers, with the rating of teachers as a part of the supervisory functions, the means of securing harmonious cooperation among the entire force of teachers, and his suggestions as to the most effective kind of supervision. Indeed, one may paraphrase his title and describe the book as uncommonly sensible. He is not dogmatic or pedantic, but states in forceful language the convictions he holds as to what his experience has taught him.

The teacher in the grades, as well as the principal or the young superintendent, would profit by a careful study of the book. Much is admitted as unsettled; much is stated as largely makeshift, but a sound educational philosophy permeates the book. It will help to meet a genuine need.

A spelling dictionary.—Children frequently fail to cultivate the dictionary habit as an aid to spelling because of the fact that the ordinary dictionary is somewhat inconvenient for that purpose. The dictionary contains so many words that are beyond the child's vocabulary and also so much material not directly related to spelling that the child refuses to take the necessary time for locating the desired word. In order to provide a means whereby children may easily and quickly look up the spelling of words, a special spelling dictionary[2] has been prepared by Coryell and Holmes.

The vocabulary of the book has been carefully selected and arranged. In all it contains about 9,000 words arranged in two parallel lists. One list, containing 3,600 words, includes 90 per cent of all words used in children's

[1] CHARLES A. WAGNER, *Common Sense in School Supervision*. Milwaukee: Bruce Publishing Co., 1921. Pp. 201.

[2] HUBERT V. CORYELL and HENRY W. HOLMES, *Word Finder*. Yonkers-on-Hudson, New York: World Book Co., 1921. Pp. viii+150. $0.72.

compositions. The remaining 5,400 words include practically all additional words which have been given in the word lists of the scientific investigations of spelling and in addition approximately 300 commonly used proper names. It also includes many common contractions and inflected forms. Where the meaning of the word may be ambiguous, concrete illustrations rather than definitions are given.

The value of the book lies in its scheme of construction. It is far more convenient for spelling purposes than a dictionary and can be used much more quickly. It reduces to a minimum the time required for finding the word, and thereby allows the major effort to be placed upon spelling associations rather than the mechanical processes of thumbing the dictionary. The plan is ingenious, and the book should prove of great value in the elementary school. Every pupil would profit by having a copy in his desk for his own use.

Spelling textbook.—Psychological analysis of the spelling problem has resulted in a marked change in the character of spelling texts. This change is evident in the range and selection of words, in the amount assigned for a daily or weekly lesson, and in the method of study recommended to the pupil. An excellent example of this new type of textbook[1] is one prepared by Professors Horn and Ashbaugh, embodying the results of the scientific studies of spelling carried on at the University of Iowa.

The vocabulary of the book contains a minimum list of 3,998 words found, through scientific investigation, to be the words most frequently used. There is also a supplementary list of 580 words less frequently used, which may be employed for expanding the work of a grade when the other list has been finished. The words have been divided into lists for grades one to eight on the basis of Dr. Ashbaugh's study of the difficulty of words. In the first grade the assignment is ten words per week, and in the following grades twenty words. Following each lesson the standard number of errors for the list is given, enabling a teacher to determine the general standing of her class as compared with other schools.

The introductory chapter, which gives general directions for the teacher and pupils, is based upon four points.

1. The teacher must test her pupils on each lesson before they begin to study.
2. Each pupil should study only the words which he misspelled on the test.
3. He must be taught an economical method of study.
4. He must see clearly what progress he is making [p. x].

The "economical method of study" mentioned in the third point is fully outlined under "Directions to Pupils."

The superiority of such a book as this over the older type of text, which was constructed on the basis of the author's experience and judgment rather

[1] ERNEST HORN and ERNEST J. ASHBAUGH, *Lippincott's Horn-Ashbaugh Speller*. Philadelphia: J. B. Lippincott Co., 1920. Pp. xx+105.

than upon objective research, is clearly evident. Schools which are still using texts written without reference to the recent spelling investigations should be quick to take advantage of a scientifically constructed book. The Horn-Ashbaugh text is an excellent example of this type of book.

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